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- The background of the cover is a full-page photograph of a natural landscape. In the foreground, there is a rocky, sloping hillside covered with low-lying green and brown shrubs. A paved path or road curves along the edge of the hill. In the middle ground, a calm, blue lake stretches across the frame. The far shore of the lake is dominated by a massive, rugged mountain with steep, rocky slopes. The sky above the mountain is filled with heavy, dark, purple-tinged clouds, suggesting an approaching storm or late evening light.
- *BIGHORN BASIN: MONUMENT TO THE FLOOD--PART II*
 - *INTEGRATING CONTEMPORARY APPROACHES TO "WORLDVIEW"*
 - *THE RUIN-RECONSTRUCTION THEORY OF GENESIS 1:2*

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Haec Credimus

For in six days the Lord made heaven and earth, the sea, and all that in them is, and rested on the seventh. —Exodus 20:11

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Integrating Contemporary Approaches to “Worldview”

Steven Chisham*

Abstract

The human worldview provides the truth-predictive component of man’s epistemological framework, approximating and/or simulating perfect knowledge of reality for purposes of decision making. This article examining worldview dynamics correlates, compares, and contrasts several popular and contemporary worldview approaches, demonstrating how all successful methods at least partially answer the universal question: “How do I understand myself relative to ultimate truth?” Also, emotional and moral components inherent in a worldview are briefly examined.

A reasonably accurate definition for worldview *in toto* would be: The mechanism by which finite beings perceive, assimilate, evaluate, and respond to infinite reality. Moreover, it is what it means for a being to be both *finite* and *rational*, which involves synthesizing a working model of reality of a size he can comprehend and, as a consequence, also defines him to be a *moral* being. (Chisham, 2015, p.16)

Introduction

Practically speaking, what does being finite mean, and how does that affect our rational ability to know? Modern theories of knowledge stipulate that “knowledge” must be true and then examine how we know and to what certainty. Consequently, philosophers eagerly attempt to either prove or disprove that human knowledge can and does accurately describe truth. Rarely has anyone explored its limits, however, where things *cannot* be humanly certain but rationality must continue. Hence, while most epistemologies ask how we know truth, the opening quote examines what moves one to act because this really gets to the core of why we wanted to know anyway.

Consequently, this epistemology is not primarily concerned with perception but with decision making, the superset that perception feeds into. While imme-

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diat decisions or judgments may appear identical with perception, in no way does the need to get a pesky squirrel off your newly painted deck compare with long-term retirement planning. The first is a simple, immediate response to reality; the second engages a perception of predicted truth. Since most decisions are processed between the extremes of straightforward sense responses and perceptive models of reality, the distinction blurs as we lose sight of our pre-sumptions and consequent bias. Worse, our finite constructs describing reality appear for all intents to *be* reality – and generally we would argue they are!

The first development in this new decision-based epistemology reduced worldview down to answers to a single question: “How do I understand myself relative to universal truth” (Chisham, 2012). Aristotle was right that *every* cognitive pursuit is driven by our desire to choose “the good” (Jefferson’s “pursuit of happiness”). Thus, worldviews form as our construct for situational awareness, functioning as a truth predictor assisting navigation toward “the good.” In terms of philosophical priority, truth must first apply to ourselves; consequently, worldview defines our self-image. Worldview thus is our understanding of reality synthesized from finite information for the purpose of predicting truth in order to judge courses of action we believe to be most beneficial.

These novel epistemological departures (Chisham, 2012, 2014, 2015) arose because existing definitions, descriptions, and discussions of worldview are often mistaken due to the simple fact that “worldview” and its underlying systematic mechanisms have never been precisely defined and explored.

However, with more than 250 years of commentary from notable men and women, prudence seems to oblige: (1) a demonstration of points of agreement between this approach and prior methods, (2) an attempt at correlation and harmonization, and (3) a discussion

of this new approach’s utility. Although previous approaches may have unstated limitations or unintentional errors, commentators *have* aided our understanding; so how does this new understanding of worldview dovetail with successful aspects of traditional and popular approaches?

The Need to Restrict Scope in Discussing Worldview

Rather than broadly asking someone to state their entire general sense of reality, worldview discussions intuitively narrow focus toward specific areas of interest. Subdividing our “digitized reduction of reality” (Chisham, 2015, p. 10) into “bite-sized chunks” is simply required to engage most people in useful, interactive discussions regarding worldview matters. The introduction to Focus on the Family’s worldview tutorial, The Truth Project (Tackett et al., 2006), notes Tackett’s objective of building

a systematic framework in which you’re going to be able to put all of those truth claims from [a series of categories he would construct] into some sort of a logical framework that will make sense of it all. It will be something like putting hooks and shelves in your closet.

Unfortunately, hooks and shelves fail when improperly placed on metaphorical closet walls. Having re-inspected worldview structurally (Chisham, 2012, 2014, 2015), the current effort is to survey several methods used to focus worldview discussions, demonstrating how well-placed hooks and shelves really do aid our understanding of worldview and engagement with others. With this in mind, there are at least three significant ways to parse worldview.

Parsing Worldview Using the Prism of Time

Every sense mechanism is constrained by the classic measurement limitations

of range, resolution, and accuracy. Even our ability to rationalize has granularity, as language becomes the finest resolution of our finite perspective. Without words to formulate a thought, creativity is brought to a grinding halt. This is what being finite means. Thus, language holds a fundamental role in worldview development. Our language base (including general sense experience) is both our communication medium and the fundamental fabric our rationality manipulates, providing the virtual “objects” needed to form conclusions. For example, creating a new surgical procedure requires vocabulary for rationalization, as well as extensive practical experience. Only by porting reality into the virtual (Aquinas would say spiritual) realm via symbolic language are we able to reason to project logical consequences. Language provides names, concepts, visualization, and sensations for truth identities (Chisham, 2012, pp. 64, 65), all of which populate our *worldview structure*, which is rationality’s reservoir of identified truths (Chisham, 2014). Moreover, since our conclusions are time sequential, earlier conclusions may cascade in the way of downstream decision errors or successes.

For that reason, one natural way of narrowing the universal worldview question is to subdivide it by time—past, present, and future. So, “How do I understand myself relative to universal truth?” becomes:

1. “Where did I come from?” (How do I understand myself relative to my infinite past?)
2. “How did I get (to) here?” (How do I explain my current existence?)
3. “Where am I headed, and what are the potential consequences of my actions?” (What meaning can my actions have on my infinite future?)

These simply describe the normal learning process in search of meaning (i.e., background knowledge, current conditions, desired results—seeking “the good,” per Aristotle), projected without

artificial time constraints. The point of contact obviously starts in Question 2 (current existence), which cannot be fully answered without engaging Question 1.

Nancy Pearcey (2005, p. 26), who coauthored *How Now Shall We Live?* with Charles Colson, rightly credits

the philosophy of Dutch Reformed thinkers like Kuyper and Dooyeweerd, whose ideas were seminal for *How Now Shall We Live?* especially its overall framework of Creation, Fall, Redemption, and Restoration.

Kuyper and Dooyeweerd influenced Cornelius Van Til, who mentored Francis Schaeffer. Schaeffer in turn influenced many modern worldview commentators including Nancy Pearcey, Charles Colson, David Noebel, Del Tackett, and many others.

Both *How Now Shall We Live?* (Colson and Pearcey, 1999) and *Total Truth* (Pearcey, 2005) reduce those framework points to simply “Creation, Fall, and Redemption,” shorthand among Reformed commentators for Christian answers to the three worldview questions. Unfortunately, Colson and Pearcey (1999, p. 14) suggested those questions were: (1) “Where did we come from?” (2) “What went wrong?” and (3) “How do we fix it?” Chisham (2014, p. 144) noted their last two questions innocently but illegitimately admit the Christian presumptions that (a) something “went wrong” and (b) needs to be “fixed.” Atheists, for example, reject both as loaded questions, unrepresentative of their worldview, and would likely say life was headed nowhere and had no grand point (e.g., Nietzsche). Consequently, generic questions frame the principles more effectively. Also, their questions should have been stated in first person since “worldviews are first and foremost personal” (Chisham, 2014, p. 142).

Expanding worldview in time, *Answers in Genesis*’s “Seven C’s” (McKeever, 2010)—Creation, Corruption, Catastrophe, Confusion, Christ, Cross,

and Consummation—simply provide more granularity regarding Christian temporal perspectives. Thus, subdivision by time provides a natural, intuitive approach to worldview evaluation since it is acquired in like manner.

Apologetic Benefits of Subdividing Worldview by Time

1. *Recognition of worldview’s time constraints highlights practical limitations in experimental science.* Soundbite comments like “you believe in religion, but I believe in science” often suggest long, technical, or convoluted replies will not be endured. One simple method of redirecting this tacit claim to omniscience is pointing out experimental science (since scientific method is the normal implication) requires test repetition, which is bounded by Question 2. Any view claiming certainty regarding origins or the future is by nature belief (i.e., necessarily religious) because Questions 1 and 3 lie outside *human* certainty. Anyone claiming otherwise may be a good scientist but is a poor philosopher! This common fallacy is the (self-refuting) philosophical mistake in positivism, which cannot be scientifically, logically, or mathematically validated because it claims too much.

When pushing the boundaries of time, all endeavor to use logic, science, history, religion, etc. for information; however, “proving” a past, unattended singularity is a forensic (i.e., inductive) exercise, not a deductive proof. Consequently, every view on origins ends in a statement of faith with its probability resting on its assumptions, the significance of which should be acknowledged. Note that actual truth is based in reality, not in the likelihood of our knowing or validating it. Some truth undoubtedly exists quite apart from our ability to predict, know, or to know it exhaustively. Failing to appreciate this difference confuses *our* worldview (approximation of reality) with *actual* truth.

The skeptic claiming “scientific” superiority over another’s “mere faith” will often dismiss evidence contrary to his view because he magically (i.e., preferentially) “knows” unverifiable things. The American Atheists Convention address (Thomson, 2009) entitled “Why We Believe in Gods” (now a book: Thomson and Aukofer, 2011) demonstrated just such philosophical overreach. Then CFO for Richard Dawkins’s Foundation for Reason and Science, Thomson’s three premises were that religious ideas are:

- a by-product of cognitive mechanisms “designed” for other purposes,
- an artifact of our ability to imagine social worlds, and
- simply human concepts with alterations.

While some of his cognitive mechanisms may well, for example, contribute to the fact “children will spontaneously invent the concept of god without adult intervention,” Thomson never examines his basic presumptions that (a) psychological mechanisms alone explain why people hold (presumably) false religious beliefs, (b) rational people, therefore, ought to be atheistic, and (c) belief in God (or gods) is therefore meritless, requiring his explanation—particularly given his admission to its ubiquity in human experience. By representing his view as objective science, he implies the epistemological superiority of his belief. To validate that no god exists, however, requires perfect knowledge over infinite time and infinite reality (including material and immaterial universes)—a point, like Hume’s skepticism of miracles, that he failed to appreciate.

Even granting some of his points, removing Thomson’s atheistic premise would certainly (a) admit the potential rationality of other faith options, and (b) force him to defend his faith position against other rational competitors. Thus, viewing worldview in time clarifies that finitude levels the epistemological playing field. It is unsurprising, then, that

the Supreme Court identified atheism as religious in *Kaufman vs. McCaughtry* and *Torcaso vs. Watkins*.

An important corollary is that intentionally rejecting views competitive to evolutionary doctrine from public education shows undue favoritism toward one particular belief framework. Preventing examination of even contrary evidence does not remove religion from the public sphere but establishes a national religion, or at least the philosophical mechanistic worldview framework for it.

2. *Time division of worldview demonstrates Question 1's importance, despite its faith nature.* Paradoxically, any answer to Question 1 also answers Question 3 because the nature of the universe's origin indicates its natural destiny. If the universe were self-caused, it would be eternally self-existent. If something outside the universe created it, that force would be independent of the universe (non-contingent) and eternal. It would be absurd to suggest the fundamental nature of the universe's cause would change through time; rather, time must be a product of whatever caused the universe. Hence, answering Question 1 consequentially identifies the universe's nature and purpose (and, thus, mine).

3. *Time also provides natural apologetic preferences.* The ability to perceive another's worldview through the lens of time can differentiate between "pre-evangelism" and "evangelism," depending on whether Question 1 or 2 is under consideration. Sometimes termed "two-step apologetics," classical Christian apologetics establishes the logical necessity for a Creator followed by evidence for the resurrection to establish Jesus' authority. An individual unconvinced his existence requires an independent Creator may or may not find the resurrection compelling. Thus, Question 1's critical nature usually requires an answer before pushing forward. Certainly, one unconcerned or convinced God does not exist is unlikely to be convinced of

Table I

That we were created by a Theistic Creator	That Jesus of Nazareth rose from the dead	Implied belief system(s)
False	False	<i>Atheism, Buddhism</i>
True	False	<i>Judaism, Islam</i>
False	True	<i>Hinduism</i>
True	True	<i>Christianity</i>

any biblical truth. A Hindu, moreover, may reject a theistic creator but still accept Jesus' resurrection, viewing Him as just another avatar (or god). Hence, arguments from nature (i.e., general revelation) are necessary to establish a pre-evangelistic, theistic framework (cf. Romans 1:19–20). It might be said, then, that orthodox Christianity rests on the historicity of only two events: (1) Creation and (2) the resurrection (Table I).

Dissecting Worldview Categorically

The previous discussion quickly narrowed toward religion because evaluating worldview through the lens of time naturally funnels toward meaning (revealing the mechanism driving our "God-shaped vacuum," which Thomson's atheistic address entirely missed: our worldview, generated by *rationality itself*). However, many pertinent topics were inadvertently left out, such as social views of government (*Weltanschauung*), categorical scientific limits, or philosophy and epistemology. These omissions point toward another way of dividing worldview. Consider Dr. David Noebel's (1997, p. 8) definition:

The term *worldview* refers to any ideology, philosophy, theology, movement, or religion that provides an overarching approach to understanding God, the world, and man's relations to God and the world.

Specifically, a worldview should contain a particular perspective regarding each of the following ten disciplines: theology, philosophy, ethics, biology, psychology, sociology, law, politics, economics, and history.

Worldview's definition is more sweeping than Noebel imagined, essentially providing the mechanism and framework by which humans *integrate knowledge*, forming one's entire non-time-constrained, interactive mental image of reality. Nonetheless, Noebel helpfully points out that worldview perspectives may be subdivided *categorically*.

Likewise, *The Truth Project's* (Tackett, et al., 2006) "systematic framework" serves as "something like putting hooks and shelves in your closet." One of its graphic analogies resembled the Greek Parthenon, having three massive foundational stone steps supporting four pillars, which then supported a roofline holding seven embedded orbs. The three foundational steps represented theology ("who is God"), anthropology ("who is man"), and veritology ("what is truth"). The four pillars were mind (philosophy), matter (science), time (history), and values (ethics). Finally, the roofline contained the sociological spheres of law, politics, economics, art, science, music, and literature. Similar to AiG's "Seven C's" above, the building illustrates a finely granulated *categorical* breakdown of worldview.

Similarities between Noebel's and Tackett's categorical approaches are not accidental, as both were disciples of Francis Schaeffer. Schaeffer famously drew parallels between philosophical shifts in social worldviews to illustrate how those shifts were mirrored through the visual arts. Schaeffer concluded that how individuals and societies view themselves affects how they behave, creating analogous shifts across categories.

Apologetic Benefits of Categorical Subdivision of Worldview

Apologetic benefits exist for categorical division, just as the temporal approach showed above. First, it is possibly the most common and intuitive method. People discussing worldview typically want to consider how ideas affect practical life judgments and intentionally limit scope for clarity, perhaps later relating parts to a bigger picture. Moreover, nothing prevents dividing worldview categorically to consider one aspect and subsequently subdividing that by time. For example, many of Francis Schaeffer's works illustrate worldview changes by examining its effects on a category such as art and then evaluate that over time to demonstrate philosophy's influence on a period's artistic expression, as well as other aspects of human existence.

Dividing Worldview by Natural and Conventional Boundaries

It should be apparent that any barrier to human communication, because of its effect on human knowledge, presents a possible way to subdivide worldview. For example, generational differences (Shallcross, 2009; Keeter and Taylor, 2009; Pew Research Center, 2007) or language are two obvious methods of division. The idea of *Weltanschauung* demonstrates that time, language, or nationalism can all account for differences in human perceptions to varying degrees. Cultural anthropologist Gary Palmer (1996, pp. 113–114) noted:

As I use the term [worldview], it refers to the fundamental cognitive orientation of a society ... subgroup or ... individual [encompassing] fundamental existential and normative postulates or themes, values [often conflicting], emotions and ethics; it includes conventional cognitive models of persons, spirits, and things in the world.... It includes as well metaphorical ... structuring of thought.

Because social groups communicate, they influence each other by sharing opinions and knowledge. For example, we often identify the "spirit of the age" by observing linguistic or generational boundaries (e.g., boomers, millennials, etc.). Likewise, belief groups (e.g., religious, political, etc.) are often identified by their defining social beliefs and viewpoints.

Worldview Constraints Highlight the Balance between Personal Freedom and Societal Restraint

Human life span, rational capacity, and language boundaries preclude omniscience, forcing rationality to *simulate* perfect knowledge to arrive at practical, actionable conclusions (Chisham, 2015). It should be clear, then, that finite beings are theoretically incapable of being perfectly unbiased with the possible exception of matters involving direct observation and perception, since worldview represents the basis of one's perspective. This fact means humans are sure to arrive at a variety of (often conflicting) views, underscoring why religious freedom is a crucial principle. Otherwise, states engaging in worldview (thought) policing effectively grant a person or elite group the inherent privileged assumption of perfect knowledge in judging someone else to be wrong, which is despotism.

For this reason, the authors of the Declaration of Independence (US, 1776) established a worldview-neutral basis for governance: civil rights, which

prioritizes a hierarchy of human need. "Civil rights" is defined here as the *mitigation of rights in conflict*. They argued that God created all men equal and granted them "certain ... rights," making those rights "unalienable." The secret to civil equality, however, lies in their order; reversing any of them undermines civility. The right to life is necessarily the highest order right, for without it all others are mute. The second is liberty. Last of all, every individual is entitled to pursue happiness (i.e. Aristotle's "good"). Slavery's evil, for example, was promoting one man's right to personal happiness (wealth) at the expense of another's more basic right to freedom, reversing the second and third based on preferential skin color. Consequently, the nation fought its first two major engagements over these same principles, testing "whether (this) nation, or any nation so conceived and so dedicated, can long endure" (Lincoln, 1863). (The answer, of course, always depends on whether the politically empowered have the commitment of character and will to act as guardians on behalf of the natural rights of the underprivileged and unempowered.) Martin Luther King's "I Have a Dream" speech expressed these same ideals.

Today the world grapples with abortion, apparently inverting the first and third rights. The deciding factor no longer is civil principle but how an individual is valued by others. Strangely, since 1973 the Supreme Court has remained silent on this pivotal question of when life begins, which should have been their first consideration. By avoiding judgment, they declared a fetus nonhuman *de facto* without taking judicial responsibility for enumerating their legal justifications. This seems like the penultimate dereliction of duty given their guidance over a nation so conceived, which used those civil principles alone as justification for secession from England. Indeed, given the unqualified ubiquity of the "unalienable

rights” statement, as penned it appears to provide the basis for international law.

Every individual has a worldview because thinking generates it. But even when we disagree, being free to admit and acknowledge each other’s worldview provides a basis for human dialog and understanding, freeing all to choose their beliefs and convictions. Christian and atheist can both be at peace knowing this is their natural (i.e., God-given) freedom. Freedom of thought can be constrained only when preventing one from violating someone else’s higher-order rights. So it is with Islamic extremism, for example. They are free to hold their views but not to impose them on others by enslaving or killing those who do not. Accepting a person’s right to hold a view is not admission it is correct but simply admits every individual’s freedom to hold convictions without compulsion from the state or suffering harm from civil rights violators.

Moreover, the First Amendment’s freedom of speech is necessary, otherwise we cannot learn from each other. Persuasion or public proclamation should never be confused with control. Freedom is a *social* phenomenon that exists only if others are free to disagree.

Worldview Involves More than Logical Manipulation of Knowledge

Traditional approaches to epistemology focus on “judgments,” which is a present-tense preoccupation (e.g., “Is that a squirrel in my backyard?”). In contrast, worldview is about decision making: how does one’s current mass of information influence his future actions? Consider what factors motivate a decision—any decision. For example, why does a person buy a certain house, start a business, or convert to a religion? Beyond cold judgment, there are nearly always a range of influential circumstances such as finances, emotional

readiness, and matters of trust surrounding perceived obligations. Cressey (1996, p. 657) comments that the Bible views knowledge (a worldview’s foundation) as similarly multifaceted:

The Greek [New Testament] ideal of knowledge was a contemplation of reality in its static and abiding being; the Hebrew [Old Testament] ... primarily ... conceived knowledge as an entry into relationship with the experienced world which makes demands not only on man’s understanding but also on man’s will.

For example, the Hebrew word (*yādaʿ*) is used regarding knowing the loss of children (Isaiah 47:8), grief (Isaiah 53:3), sin (Jeremiah 3:13), God’s hand and might (Jeremiah 16:21), and His vengeance (Ezekiel 25:14) and as a euphemism for sexual relations (e.g., Genesis 4:1; Judges 11:39).

Likewise, an evangelistically interesting question is why a person, given all his intellectual answers, would not immediately convert to Christianity (which tends toward the Greek notion above)? Such conversions are the exception, however, not the rule. Calvinistic approaches might attribute this disconnect to predestination and election, whereas an Arminian might complain this makes for an easy and quick excuse, failing to understand what drives the individual’s convictions. Either position ought to appreciate an observation regarding the greatest Mosaic command, which Jesus said was to love God with all one’s heart, mind, and soul (Matthew 22:36–38). If believers must love God these diverse ways, it seems logical individuals coming to faith must also come to love God those same ways: intellectually, emotionally, and as a matter of duty or conviction.

As a matter of fact, these same areas do play a part in every personal consideration of consequence, whether a major purchase or a religious conversion. Sales consultants (Heiman et al., 1999, pp. 31–32) note:

Buying is a special case of decision-making.... By ignoring or working against the customer’s decision-making process, you ensure confusion, resentment, and—sooner or later—lost sales.

They note further:

In traditional selling, product knowledge was a magic elixir. Coupled with glibness—allegedly the sales professional’s contribution to human interaction—it could turn the most recalcitrant buyer into a willing victim by enabling the salesperson to “sell” her whether she wanted to buy or not. Hence the ultimate salesman cliché: “He could sell iceboxes to Eskimos.” (pp. 19–20)

But, they assert:

People buy for their own reasons, not for yours. (p. 22)

Thus, it might be said a person merely intellectually convinced is only one-third of the way to full conviction. Something more is required to even rise to a simple majority in his mind. Moreover, those who are “persuading” need to see others holistically, not relying simply on rational argument or strictly emotional appeal. Though a cliché, we must live our message, not just preach it. While an individual must ultimately encounter God, not just be “sold” some truth, this suggests parts we play in helping others to make, really, all manner of decisions. Perhaps this explains Lee Strobel’s (Murashko, 2012) appeal for a more “relational” apologetic approach:

The trend is toward dialogue, discussion, and conversations. I call it “relational apologetics.” This isn’t your grandfather’s apologetics, where we line up people against the wall and machine gun them with a barrage of facts. It’s where we invite spiritually curious friends and neighbors into a safe environment where we can engage with them, listen, empathize, validate them as people, and help them get answers to the “spiritual

sticking points” that are holding up their journey toward Christ.

Conclusion

Having examined worldview mechanics (Chisham, 2012, 2014, 2015) and finding them to forge a rational simulation of reality from finite data, this article correlated that new epistemological understanding with contemporary and historical approaches. Though worldview is a single, unified principle that drives human decision making, its global perspective often makes it difficult to visualize and understand. Consequently, people typically subdivide worldview when discussing it. Worldview can be conceptually subdivided at least three ways: by examining one’s worldview conclusions through time, by discussing the categories worldviews affect, or by observing effects on perception resulting from worldview’s natural boundaries (e.g., mortality and language) or conventional boundaries (e.g., religion or nationality).

Moreover, decisions are typically not entirely based on objective, cold facts. For a person to make a decision, particularly an important decision, he must be convinced not only intellectually but also by intuition, which involves one’s emotions and sense of duty, as well. However, each individual will assign his own weight to these aspects, depending on his natural and situational disposition, which is why what convinces one person to act in a certain situation may be very different for others in the same scenario.

Understanding these dynamics surrounding worldview helps us relate to others in healthier ways, rather than trying to control other people’s thoughts and opinions. It also helps to draw healthier boundaries for those who would overstep their ability to know, possibly violating the civil rights of others, such as the intellectual right to freedom of thought and belief or even the right to life itself.

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The Bighorn Basin, Wyoming— Monument to the Flood

Part II: The Retreating Stage

Michael J. Oard*

Abstract

The Bighorn Basin is a spectacular example of the retreating stage of Noah's Flood. Very large, differential vertical tectonics in the early retreating stage initiated drainage of Floodwaters into subsiding ocean basins. Concurrent uplift of mountain ranges warped sedimentary layers, and deformation included the movement of the Heart Mountain Slide in the northwest Bighorn Basin. Erosion removed most of the strata from the Beartooth and Bighorn Mountains, but only Mesozoic and early Cenozoic strata were removed from the Owl Creek Mountains. Eroded sediments provided valley fill for the Bighorn Basin. To the west, the Absaroka Volcanics formed by volcanic debris flows. Large "alluvial fans" formed on the east sides of the Beartooth and Bighorn Mountains but were then deeply eroded by north-flowing, channelized Floodwater currents. These currents also eroded several thousand feet of Bighorn Basin fill. Planation surfaces formed on the edge of the surrounding mountains and in the Bighorn Basin, surviving today as erosional remnants. Currents also transported quartzite from central Idaho, redeposited as gravel lags. Pediment and pediment remnants formed, and at least four water gaps were cut.

Introduction

The Bighorn Basin provides a record of much of Earth's history. Oard (2017) described the onset of the Flood in this area with the carving of the Great

Unconformity, visible at the margin of the basin, into granite and gneiss of Creation Week crustal rocks. As energy decreased, around Day 40, the

Great Deposition emplaced horizontal layers of the Paleozoic, Mesozoic, and early Cenozoic. These rocks show little evidence of folding or faulting in the western United States, and strata can be traced long distances with little or no sign of erosion between or within layers—powerful evidence for a single depositional event. The Bighorn Basin

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is noted for its numerous dinosaur fossils, and millions of tracks in strata of the northeast Bighorn Basin.

The Two Phases of the Retreating Stage

Walker (1994) identifies the second stage of the Flood as the *recessive or retreating stage*, which he divided into the *abative or sheet-flow phase* and the *dispersive or channelized-flow phase* (Figure 1). In the *sheet-flow phase*, vast currents, up to 1,000 miles wide or more, flowed unimpeded into subsiding oceans. Current size and velocity depended on global flow patterns. As the Flood level dropped relative to the continents, rising mountains and plateaus increasingly deflected and disrupted these sheets, forming large channels (Figure 2). During the *channelized-flow phase*, these diminished in

size and volume, leaving the modern drainage system.

The presence of sheet/channelized flow depended on the elevation of the underlying land surface and Earth's rotation. Both phases could occur simultaneously, channelized flow at higher elevations and sheet flow in lower. For example, channelized flow could have been ongoing in the Rocky Mountains while sheets of water still covered the Gulf Coast.

Huge Differential Vertical Tectonics

Differences in elevation were driven by large-scale differential vertical tectonics, which began either at the peak of the Flood or soon after (Oard, 2008, 2013a). Psalm 104:8 states that the mountains rose and the valleys sank. That this refers to the Flood and not Day 3 of Creation is

shown in verse 6, where God *covers* the mountains. On Day 3, He uncovered them. Verse 9 reflects God's promise that there would not be another Flood. Though verse 8 speaks of "mountains" and "valleys," the principle applies at all scales, up to and including the vertical separation of continents and ocean basins. King (1983) described physical evidence for ocean basin subsidence.

These tectonic motions are seen in the Bighorn and Clarks Fork basins and along the edges of the Bighorn and Beartooth mountains, particularly Clarks Fork Canyon (Figure 3). Mackin (1937, p. 819) stated:

These relations support the view that the Laramide orogenic movements in the Middle Rockies were predominantly differential displacements of basins and ranges, absolute uplift of the ranges being accompanied

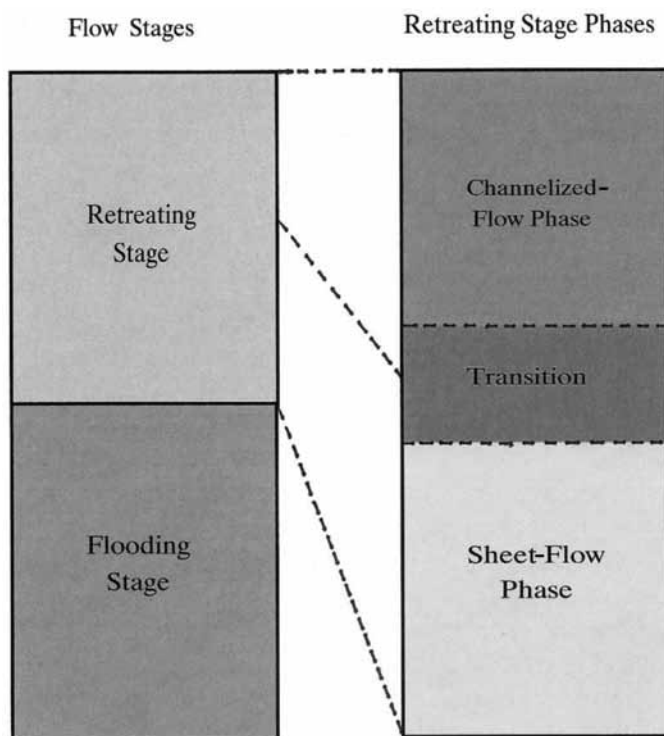


Figure 1. Two stages of the Flood (left) with the two phases of the retreating stage (right) from Walker (1994). Drawn by Mrs. Melanie Richard.

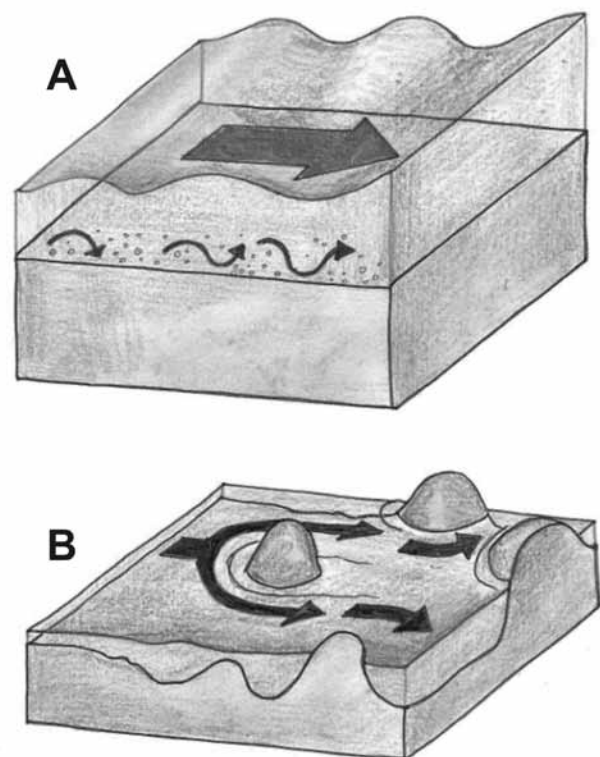


Figure 2. Transition from sheet flow (A) to channelized flow (B) in the retreating stage. Drawn by Mrs. Melanie Richard.



Figure 3. Tilted Paleozoic and Mesozoic strata at Clarks Fork Canyon on the northern end of the Rattlesnake Mountains. Clarks Fork Canyon separates the Rattlesnake Mountains and the Beartooth Mountains.



Figure 4. Heart Mountain north of Cody, Wyoming, slid eastward over the valley fill of the Bighorn Basin that was around 1,500 feet (457 m) higher than now seen at this location.

by absolute downwarping of the basin floors.

Total motion in Wyoming was easily 45,000 ft (13,716 m) (Oard, 2017). Similar amounts are seen in the Uinta Mountains of northeastern Utah (Hansen, 2005; Oard, 2012). The timing of

displacement here appears to correlate to the mid- and late-Cenozoic.

Heart Mountain Slide

The Heart Mountain Slide was a 430 mi² (1,114 km²) mass of limestone that

slid eastward over 40 miles (64 km) and broke up into 50 large blocks (Oard, 2006, 2010). The McCullough Buttes and Heart Mountain (Figure 4) slid over valley fill of the western Bighorn Basin, and the South Fork slide occurred about the same time to the south (Clarey, 2013). Most geologists believe that the slide took between 4 and 30 minutes; the mass achieved velocities up to 100 mph or more, despite the slight slope of about 2° east. Today, the glide plane is nearly horizontal. The mechanics of the slide defy uniformitarian explanation, but not the Flood. The blocks could have broken clear and slid underwater when the Yellowstone Park area was uplifted. The area vacated by the slide was filled with up to 6,000 ft (1,829 m) of volcanic lahars, the Absaroka Volcanics, which eventually covered 9,000 mi² (23,310 km²). These events likely occurred during the sheet-flow phase.

Erosion in the Retreating Stage

A tremendous amount of erosion took place during the Retreating Stage of the Flood (Oard, 2008, 2013a; Walker, 1994). This is seen in the Bighorn Basin and surrounding mountains.

Thick Sedimentary Rocks Eroded from the Mountains

The Beartooth and Bighorn Mountains were rising during the sheet-flow phase, resulting in significant, large-scale erosion of overlying strata. Subsiding basins experienced little erosion, and sediments eroded from surrounding mountains filled them. Most of the movement occurred along the Beartooth fault (Figure 5). Valley fill in the northern Bighorn Basin, which overlies thick strata of the ascending phase, reaches 10,000 ft (3,048 m) below sea level. Fill reaches 20,000 ft (6,096 m) below sea level in the southern Bighorn Basin. Basin subsidence and sedimentation began

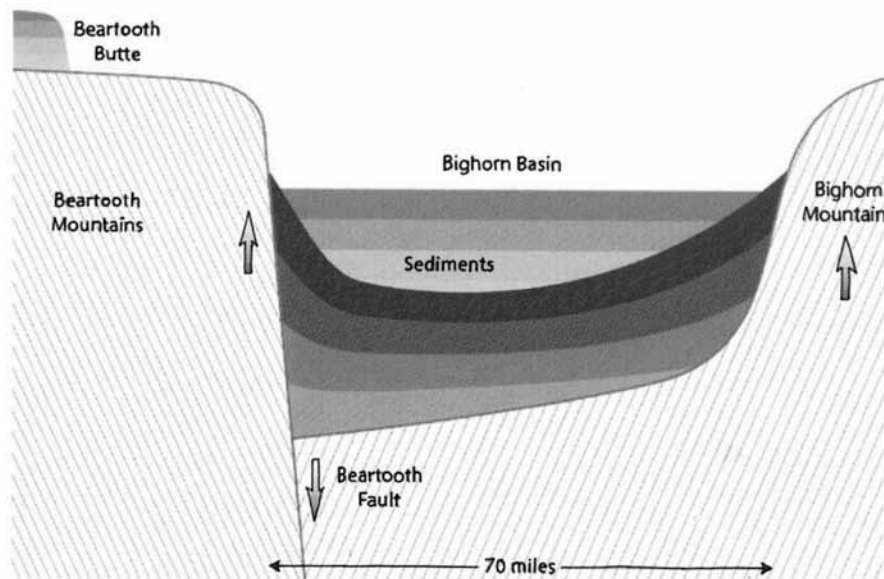


Figure 5. Schematic of Beartooth fault showing about 23,000 feet (7,000 m) of vertical displacement. Slanted patterns represent granite and gneiss of the upper crust. Modified from Coffin and Brown (1983) and redrawn by Mark Wolfe.

in either the ascending and/or zenithic phases, near the Flood's peak at Day 150.

Uplift and erosion was so great that the Great Unconformity was exposed in some mountain ranges, but in the Owl Creek Mountains, Paleozoic cover over the granite core, exposed in the Wind

River water gap (Figure 6) shows a different picture. Granite dikes intrude the lower strata, suggesting that hot, plastic granite formed during uplift and was squeezed up into the strata.

The Absaroka Mountains differ from surrounding mountain ranges, ex-

hibiting thick accumulations of volcanic debris flows in lahars. This formation represents a massive amount of volcanics from an unknown area that was eroded and *redeposited* as lahars. These lahars contain numerous petrified trees (Figures 7 and 8). Scientists claim that vertical trees in layers of the Absaroka Volcanics represent tens of thousands of years of forestation and destruction. Some formerly professing Christians say they lost their faith because of this formation (Numbers, 2006, p. 13). A closer examination shows the uniformitarian conclusions are specious. Paleosols are not found with the trees, which include a variety of about 200 species ranging from tropical to cooler temperate zones. Many trees lack roots or branches and show other anomalous features (Coffin, 1997; Coffin et al., 2005). Evidence points to deposition from a floating log mat (Oard, 2014a) (Figure 9), like that seen after the Mount St. Helens 1980 eruption in Spirit Lake. Those trees also lack roots and branches (Morris and Austin, 2003) and demonstrate how logs can be deposited in multiple layers during one cataclysm.



Figure 6. Granite intruding sedimentary rocks in the center of the Owl Creek Mountains.



Figure 7. A vertical, 2.5-meter diameter vertical petrified tree at the top of Specimen Ridge, Yellowstone National Park, Wyoming (Madison Gilmore provides scale).



Figure 8. Large horizontal petrified trees near the top of Specimen Ridge, Yellowstone National Park, Wyoming (Van Wingerten provides the scale).

“Alluvial Fans” from Sheet-flow Erosion

Sheet-flow currents, moving west to east, built up large “alluvial fans” on the

east sides of the Beartooth and Bighorn Mountains. At one time, the fan on the east of the Beartooth Mountains was up to 2 miles (3.2 km) thick. It tilts to

the east at about a 30° angle, partly due to non-horizontal deposition and partly due to later uplift. Rocks in this fan are mostly angular carbonates up to 25 inches (64 cm) across. Channelized-flow erosion later removed about 99% of the fan, leaving erosional remnants (Figure 10). Figure 11 is a schematic summary of the deposition and erosion of this fan.

The “fan” east of the Bighorn Mountains contains mostly sub-rounded granite rocks (Figure 12), up to 25 ft (7.6 m) in diameter. Carbonate and sandstone rocks must have been pulverized before the fan was deposited. The fan was later eroded by northward currents flowing through the Powder River Basin.

Another deep “alluvial fan” formed over southwest Montana, during the Idaho Batholith uplift. It was then broken up by vertical faulting, and most of its material was removed by channelized erosion. Today it is seen only as erosional remnants in mountains and valleys (Coffin 2009; Thomas, 2016), like Sphinx Mountain (Figure 13)—3,000 ft (914 m) of limestone breccia, like that found east of the Beartooth Mountains.

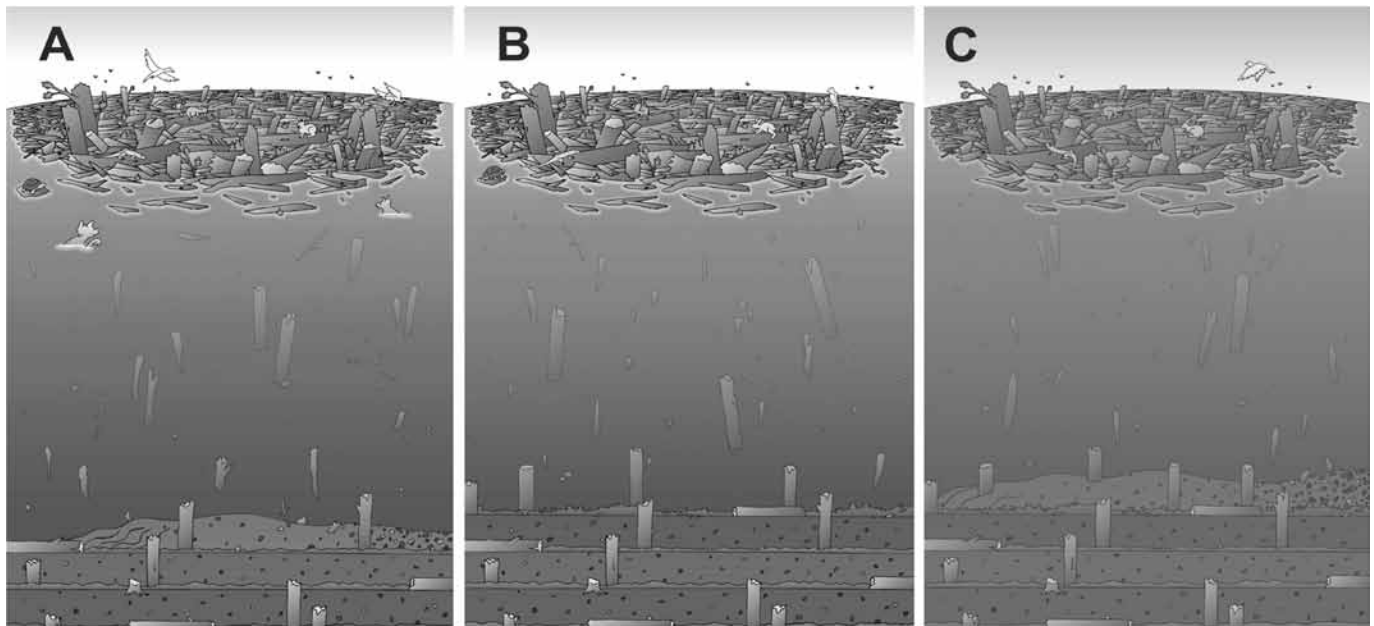


Figure 9. A log mat contributes sinking trees into successive lahars (A-C) forming the Absaroka Volcanics debris flows. Drawn by Keaton Halley.



Figure 10. A 1,300-foot (396-m) high erosional remnant of limestone conglomerate or breccia along the southeast flank of the Beartooth Mountains (view south from the road to Clarks Fork Canyon).



Figure 12. A 9-foot (2.7-m) sub-round-ed granitic boulder like many spread east of the Bighorn Mountains (Dr. Harold Coffin for scale).

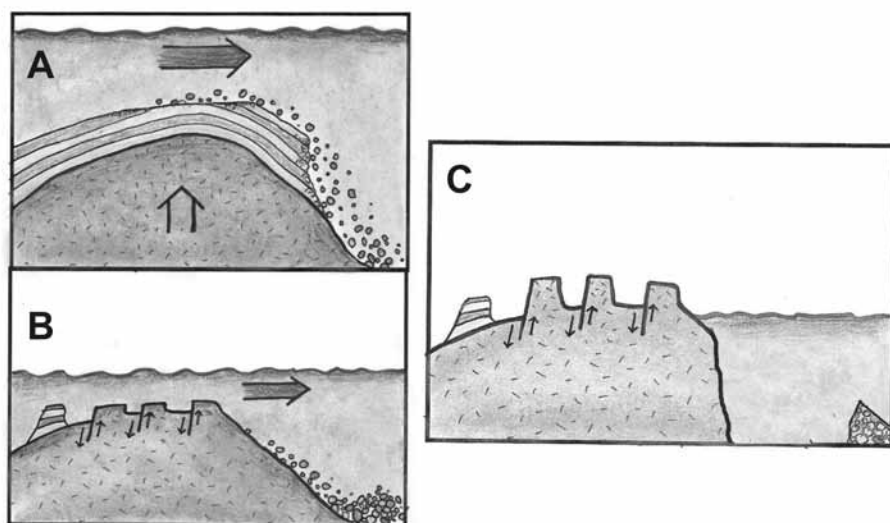


Figure 11. Schematic illustrating deposition and erosion of the conglomerate east of the Beartooth Mountains (drawn by Mrs. Melanie Richard). (A and B) As sedimentary rocks are eroded off the top of the Beartooth Mountains, a thick debris fan piles up on the east side. (C) The Beartooth Mountains emerge from the Flood and channelized currents flow north through the Bighorn Basin (into picture). Most of the debris fan is eroded, leaving behind erosional remnants as much as 2 miles (3.2 km) from the base of the mountains, as in Figure 10.

Thousands of Feet of Valley-fill Erosion

The Bighorn Basin was filled primarily with sediments eroded from surrounding mountains. As flow transitioned to chan-

nelized flow, currents moved downslope to the north, where they joined with a west-east current moving across eastern Montana. In the northern Midwest, water converged with currents from the

western Appalachians, shifted south, and transported massive volumes of sediment to Texas and the Gulf of Mexico. Debris from the erosion of valley fill from Rocky Mountain basins is not found nearby, as predicted by uniformitarian geology. Instead, it was transported as far as the Gulf of Mexico during Flood runoff.

Several thousand feet of the Bighorn Basin fill sediment was eroded, as shown by the height of erosional remnants and coal rank. Tatman Mountain is a planation surface remnant, about 1,000 ft (305 m) above the lower planation surface in the basin, capped by rounded rocks. Near the top is a layer of low-rank lignite coal, which indicates a previous sediment cover of at least a few thousand feet (Mackin, 1937). This suggests that a patch of valley fill called Darton's Bluff, high in the Bighorn Mountains, is an erosional remnant. Scientists believe that thousands of feet of valley-fill sediments were eroded from the Bighorn Basin (Kochel and Ritter, 1982; McKenna and Love, 1972).

Sheet-flow Planation Surfaces

Several planation surfaces formed in this region during the sheet-flow phase. After the Absaroka Volcanics were de-



Figure 13. Sphinx Mountain, Madison Range, southwest Montana, is composed of 3,000 feet (914 m) of limestone breccia.

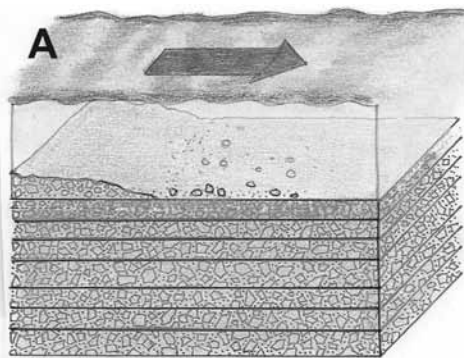


Figure 14 (*left*). Transition from sheet flow to channelized flow erosion in the Absaroka Volcanics of north-central Wyoming and south-central Montana: (A) Deposition of volcanic lahars, (B) sheet erosion formed a planation surface, (C) channelized erosion cut canyons. Drawn by Mrs. Melanie Richard).

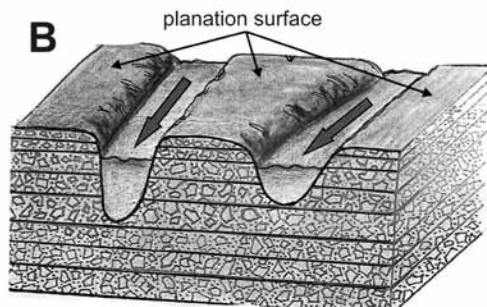


Figure 15 (*below*). Planed top of Gypsum Mountain, northwestern Wind River Mountains, with strata dipping west at about 40°.

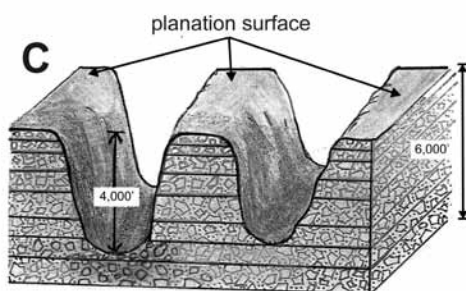




Figure 16. YU Bench, a gravel-capped planation surface about 20 miles (32 km) southeast of Cody, Wyoming, looking north to McCullough Peaks from the Heart Mountain slide. Rounded rocks are primarily from the Absaroka Mountains to the west.



Figure 17. Polecat Bench planation surface. Notice strata dipping slightly to the right.



Figure 18. A planation surface on top of a small plateau in the Bighorn Basin, just west of Greybull, Wyoming. Note that the strata dip to the west at about 30° (view south).

posited, their top was planed, as seen on mountaintops in the southern Absaroka Mountains (Love et al., 2007; Mackin, 1937). Later channelized erosion there created canyons up to 4,000 ft (1,219 m) deep (Figure 14). All of this erosion correlates to the mid-to-late Cenozoic, suggesting that the post-Flood boundary is in the late Cenozoic. Planation surfaces were also cut into thick Paleozoic sedimentary rocks flanking the Wind River Mountains, south of the Bighorn Basin (Figure 15). Planation surfaces likely represent late flow in the area. Waning flow would have deposited the existing thin veneer of mostly rounded rocks atop these surfaces.

Bighorn Basin Planation Surfaces

Tatman Mountain is a remnant of a higher planation surface in the Bighorn Basin that extended from Wyoming to Alberta (Alden, 1932). Erosional remnants of this planation surface are found in the Cypress Hills of southeast Alberta and southwest Saskatchewan and a small quartzite cobble-capped remnant between Circle and Miles City, Montana. At one time, it must have extended at least 600 miles (966 km) north-south and 200 miles (322 m) east-west, sloping down from the Rocky Mountains. Given this extent, it probably formed early during the sheet-flow phase.

This extensive planation surface was eroded, and other lower planation surfaces carved. Alden (1932) claimed that there were four distinct planation surfaces on the High Plains. He underestimated by at least one, missing the Wood Mountain planation surface. In the northern Bighorn Basin, YU Bench (Figure 16) and Polecat Bench (Figure 17) are remnants of another. This surface cut across tilted strata, eroding both hard and soft rock in one continuous surface (Figure 18). It was later dissected by late channelized Flood currents and post-

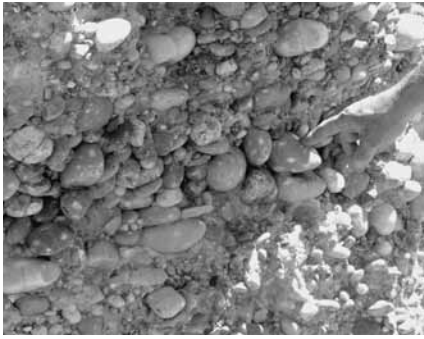


Figure 19. In-situ quartzites with pressure solution marks in the southern Bighorn Basin.

Flood erosion and is capped by rounded rocks, primarily from the Absaroka Volcanics, with minor quartzite.

Quartzite Rocks

Very well-rounded quartzite rocks of gravel to boulder size are found in the Bighorn Basin (Figure 19), the Jackson Hole Valley, and in the western Wind River Basin. The closest source is central Idaho, about 200 miles (322 km) away. These rounded quartzites spread

both west and east, suggesting transport during the sheet-flow phase before the Rocky Mountains had been fully uplifted (Oard et al., 2005, 2006). Similar rocks are found on top of at least four mountain ranges in the northern Rocky Mountains and on mountains of eastern Oregon, indicating areas of uplift after the deposition of the quartzites. Some are found concentrated in some valleys, carried by currents of the channelized-flow phase.

The southern third of the Bighorn Basin has similar quartzite rocks, but no planation surfaces. This pattern can be explained by an east-west current that later shifted north. The Owl Creek Mountains were probably just starting to rise, blocking the spread of quartzite rocks and turning the current north. This flow possessed insufficient energy to plane the southern part of the Bighorn Basin but was energetic enough to transport and deposit millions of quartzite rocks. With no mountain ranges blocking the flow to the north, the current accelerated away from the north slope of the Owl Creek Mountains, regaining enough energy to carve planation surfaces in the northern Bighorn Basin. Rocks of Absaroka Volcanics were carried into the northern Bighorn Basin and carpeted most of that planation surface.



Figure 20. Pediment erosional remnant east of the Beartooth Mountains.



Figure 21. A pediment just east of the northeast Beartooth Mountains, Montana.

Pediments

Pediments are planation surfaces found at the foot of mountains. Those along the edges of the Bighorn Basin are mostly isolated but are more developed along the western edge of Clarks Fork Basin (Figure 1 in Oard, 2017). They also suggest formation during the waning fast currents of the Flood; both from erosion and from deposition of lag gravels. Accelerating flow caused erosion of the pediment and then dissected it, leaving only remnants (Figure 20). Another pediment at a lower elevation could have formed, depending upon flow conditions.

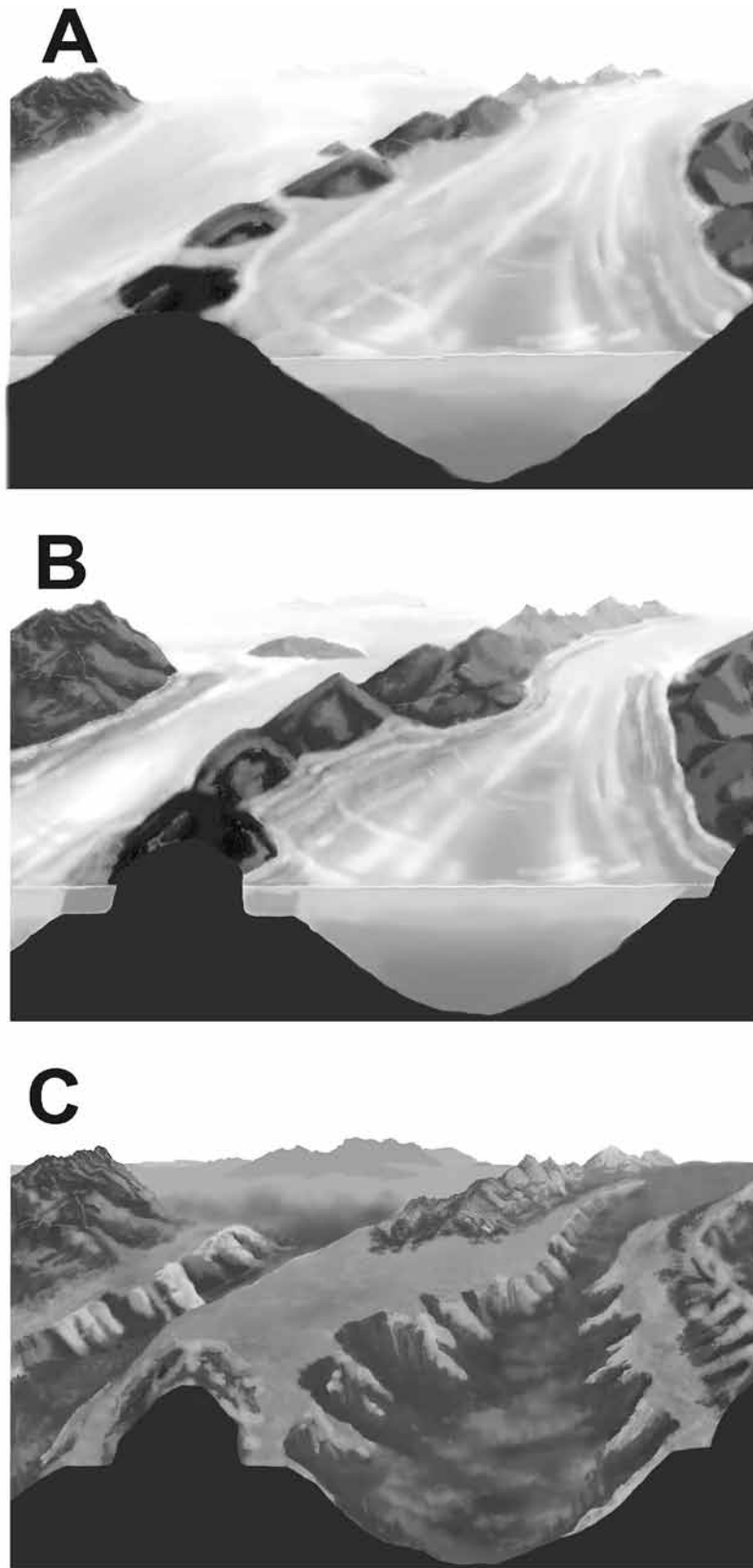


Figure 22. Schematic of the formation of a pediment pass (drawn by Mrs. Melanie Richard). (A and B) Channelized Floodwater carved a pediment on both sides of the mountain range. (C) Pediments merged at the top of the range.

The most spectacular pediment is found along the northeast corner of the Beartooth Mountains in the Clarks Fork Basin (Figure 21). It stands about 1,500 feet (457 m) above Clarks Fork Basin and about 3,000 feet (914 m) above the Yellowstone River to the north. Pediment remnants are found at about the same altitude to the west, along the northern Beartooth Mountains. This high pediment probably formed during sheet-flow erosion (most pediments in mountain valleys would have formed during the channelized-flow phase). It was preserved possibly because the fast flows between the broad currents moving eastward over the Montana and Alberta High Plains and the one flowing north from the Bighorn Basin converged, with the strongest flow being away from the mountains, creating a low flow velocity area over this pediment.

Most secular theories of pediment formation (except Crickmay's super-flood idea) include water flowing out of adjacent mountains (Oard, 2013a). However, this pediment extends from a *ridge* in the Beartooth Mountains. The deep valleys carved in the pediment connect with valleys from the Beartooth Mountains, indicating that mountain streams dissected the pediment but did not create it. Flow in uniformitarian conditions is not powerful or widespread enough to cut pediments (Oard, 2013a). Pediments, pediment passes, and pediments found on uplifted rock domes all demonstrate that uniformitarianism cannot explain field features.

A *pediment pass* is parallel pediments on two sides of a mountain range. An example is found in southern Arizona, where pediments converge and then merge atop a mountain range but at different altitudes (Howard, 1942) (Figure 22). If water from the mountains carved the flat pediments, as uniformitarians believe, how could it have formed a pediment that high? Furthermore, uplifted domes in the Mojave Desert, like Cima Dome, are surrounded by pediments.



Figure 23 (*above*). Cima Dome, eastern Mojave Desert, California, with a few monadnocks, rounded erosional remnants left behind from the erosion.

Figure 24 (*below*). Block diagram showing the developing of pediments (A-E) along the sides of mountains during the downvalley drainage of the Floodwater. Drawn by Peter Klevberg.

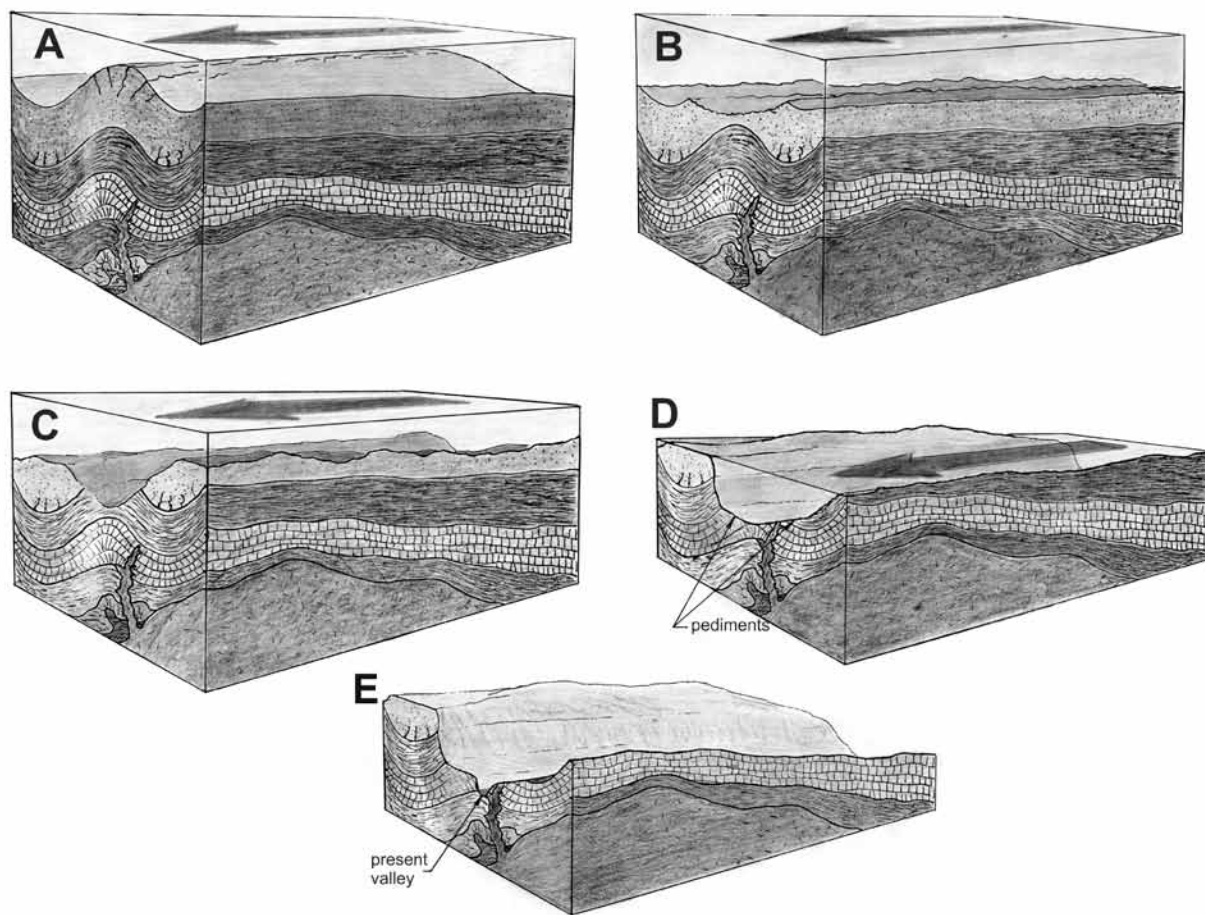




Figure 25. A water gap through the Rattlesnake Mountains west of Cody Wyoming. The Shoshone River flows east toward the viewer.



Figure 26. Buffalo Bill Reservoir showing wide low point to the south (view southeast). The arrow shows Shoshone water gap.

Cima Dome and its encircling pediments are the same altitude and topped with rounded rock (Figure 23). A Flood explanation better addresses field reality.

Crickmay's (1974) superflood hypothesis comes closest to explaining

pediments. He understood the necessity of flood currents parallel to the mountains. He also noticed the exotic rocks atop some pediments and concluded that they were cut by superfloods flowing parallel to the mountains. I

have seen many pediments topped by exotic quartzites transported from central Idaho. These large, rounded rocks clearly indicate flow *parallel* to the mountains, although many of the rocks originated from the surrounding mountains, which is expected since there would be a component of flow from off the mountains during a waning current. Cobble to boulder-sized rocks require large, energetic currents. Crickmay was on the right track, but his recurring "superfloods" were too small, since the valleys were filled by deep, fast currents. The pediment on the northeast tip of the Beartooth Mountains shows that *all of Montana* east of the divide was covered by a deep, fast current, energetic enough to erode the High Plains to the level of the Yellowstone River, 3,000 feet (914 m) below the pediment. In the Flood model, pediments were eroded during the channelized erosion as currents swept down the valleys (Figure 24). These currents represented the last Floodwaters in that area.

Water Gaps

Water gaps are found in the Bighorn Basin and adjacent mountains. Water gaps are gorges that transect a mountain, mountain range, plateau, or any other structural barrier and carry a stream or river. There are thousands of water gaps across the world (Oard, 2013a); the Susquehanna River basin in Pennsylvania alone has 653 (Lee, 2013).

A spectacular water gap is found west of Cody, Wyoming, carrying the Shoshone River (Figure 25). It is 2,500 ft (762 m) deep, carved into hard granite and the sedimentary rocks of the Rattlesnake Mountains. Uniformitarians think the present river eroded it, but had it moved only two miles (3.2 km) south, it could have flowed around the southern end of the Rattlesnake Mountains instead of cutting their southern edge (Figure 26). The area to the south is so low that engineers had to place another dam on

the Buffalo Bill Reservoir to keep the water out of the Bighorn Basin.

A 3,000-ft-deep (914 m) water gap cuts through the Owl Creek Mountains south of Thermopolis, Wyoming (Figure 27). The Wind River flows through this gap and becomes the Bighorn River on the north side. Uniformitarians think that sediments in the Wind River Basin were once higher than today. If so, the Wind River should have exited a low to the east, toward Casper. The pass is about 1,000 ft (305 m) higher than the Wind River at Riverton, Wyoming, but the Owl Creek Mountains are 3,000 ft (914 m) high. Mackin (1937) says this water gap was formed by stream capture—a small stream in the Owl Creek Mountains eroded south through the mountains and captured the Wind River, which was flowing east.

Another water gap is found in a low saddle between the northern Bighorn Mountains and the Pryor Mountains to the north. It is unique—its river flows through entrenched meanders 1,300 ft (396 m) deep. The meanders are on top of the water gap (Figure 28). Both sides of the entrenched meanders are vertical, while meandering channels have a steep outside bend and a gentle inside bend (Oard, 2013a).

The Sheep Mountain water gap carries the Bighorn River through a 1,000-ft (305-m) uplift in the northwest Bighorn Basin (Figure 29). A pediment was carved after the uplift on its east slopes. The uplift is partially capped by exotic quartzite rocks and dissected by subsequent erosion.

Uniformitarian geology has not explained water gaps. Every hypothesis has serious difficulties (Oard, 2013a). The single greatest problem is the courses of the rivers. With slow, gradual erosion, rivers seek low ground. In many cases, rivers could have flowed around structural barriers, rather than through them. John Wesley Powell formulated one of the earliest hypotheses for water gaps in the 1860s to explain the remark-



Figure 27. A 3,000-ft (914 m) deep water gap through the Owl Creek Range, south of Thermopolis, Wyoming.



Figure 28. Entrenched meanders on the Bighorn River as it cuts through a water gap in a ridge between the Bighorn and Pryor Mountains.

able water gaps on the Green River and the Colorado River (Oard, 2014b). He called it the *antecedent river hypothesis*. He believed that rivers were already in

place and that the structural barrier rose at the same erosion rate as the river. This remarkable balance allowed the river to erode the barrier rather than flow around



Figure 29. Water Gap of the Bighorn River through the Sheep Mountain anticline just northeast of Greybull, Wyoming, in the Bighorn Basin. The anticline is about 1,000 feet (305 m) high.

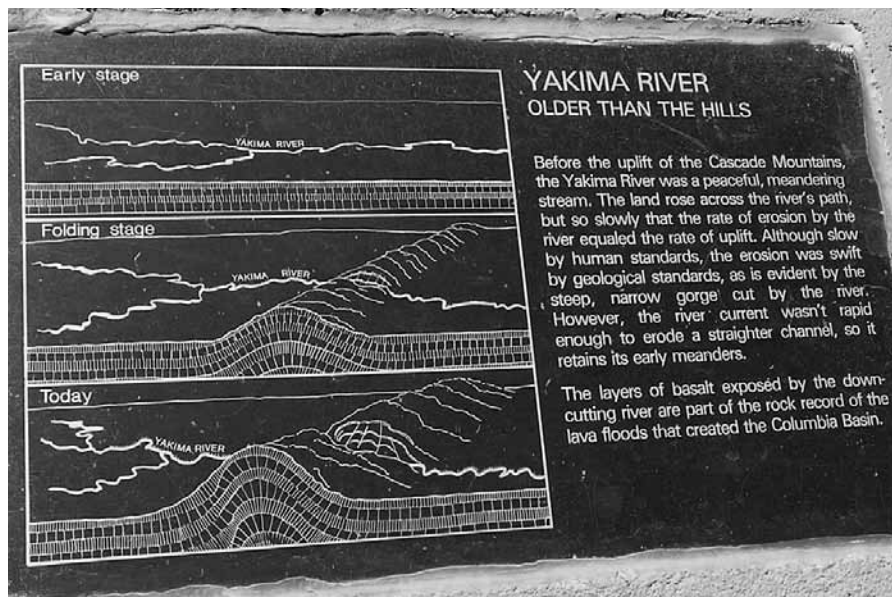


Figure 30. Plaque of the antecedent river hypothesis explaining how the Yakima River cut through a lava ridge. The Yakima River was already present as the ridge slowly uplifted at the same rate the river eroded downward, keeping the course in place.

it or form a lake (Figure 30). How likely was his idea? Not very. Most scientists have rejected it because the majority of mountains and plateaus, including those carved by the Green and Colorado Rivers, indicate the barrier preceded the river.

Water gaps are readily explained by late Flood erosion (Figure 31). Water draining over rising barriers found low spots (Figure 31a), channelized and accelerated through these spots (Figure 31b), and eroded preferentially through the developing gaps (Figure 31c), leaving gaps for developing rivers, or, if high enough, became wind gaps (Figure 31d). Wind gaps are almost as common as water gaps.

Post-Flood Rapid Glaciation

The Bighorn Basin also displays remnants of the Ice Age (Oard, 2004, 2013a,

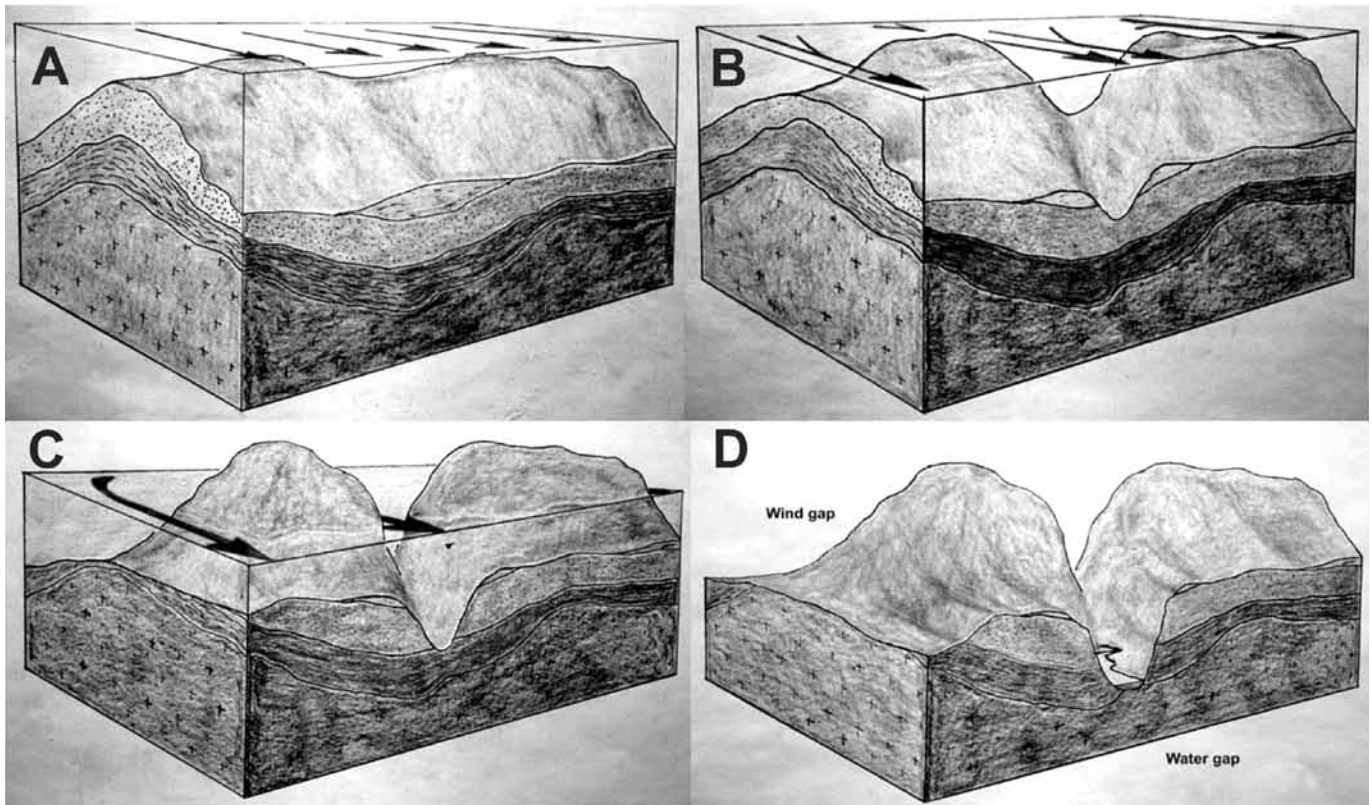


Figure 31. Schematic showing the formation of water and wind gaps (drawn by Peter Klevberg). (A) Water flowing perpendicular to a transverse ridge forms shallow notches on the ridge. (B) Notches erode deeper as the water drops below the ridge. (C) Notches deepen as water level subsides. (D) After Flood, river drainage is established in existing low. Higher notches become wind gaps.

2013b). A terminal moraine at Clarks Fork Canyon is locked between two erosional remnants of an alluvial fan east of the Beartooth Mountains (Figure 32). Thousands of partially rounded granite boulders dot the plains up to 6 miles (10 km) east of this moraine. The boulders are up to 6 ft (2 m) in diameter (Figure 33). It is possible that they were spread when a flood breached the terminal moraine. Or, they may represent catastrophic melting of an ice sheet, if it was large enough to carry them. Outwash terraces around and east of Cody formed by catastrophic melting, as did outwash terraces found near Red Lodge, near the northeast corner of the Beartooth Mountains.



Figure 32. End moraine at the mouth of Clarks Fork Canyon. A breach in the moraine at right may have allowed the deposition of boulders in Figure 33.



Figure 33. Rounded granite boulders near Clarks Fork Canyon.

Conclusions

Evidence from the retreating stage of the Flood and the Ice Age are seen in the Bighorn Basin and surrounding mountains. Huge differential vertical tectonics, during the later stage of the Flood,

is seen in the uplift of the mountains and sinking of the basin. The rapidity of movement is seen where sediments sharply bend over the high rising mountains, and by displacement of the Heart Mountain Slide. As the Flood retreated,

erosion removed rocks from many mountains. Some of this was trapped in the Bighorn Basin, forming thick valley fill. Huge “alluvial fans” accumulated east of the Beartooth and Bighorn Mountains and were then mostly eroded. Several thousand feet of this valley fill was swept away by energetic currents as the water was restricted during the channelized phase. During both stages, planation surfaces formed and were then eroded. Quartzite rocks, up to boulder size, were transported long distances and spread. Pediments were carved and then re-eroded, and water gaps formed. Figure 34 summarizes these events. The Ice Age, an aftereffect of the Flood, left behind moraines, outwash features, and boulders. The Bighorn Basin is a monument to the Flood.

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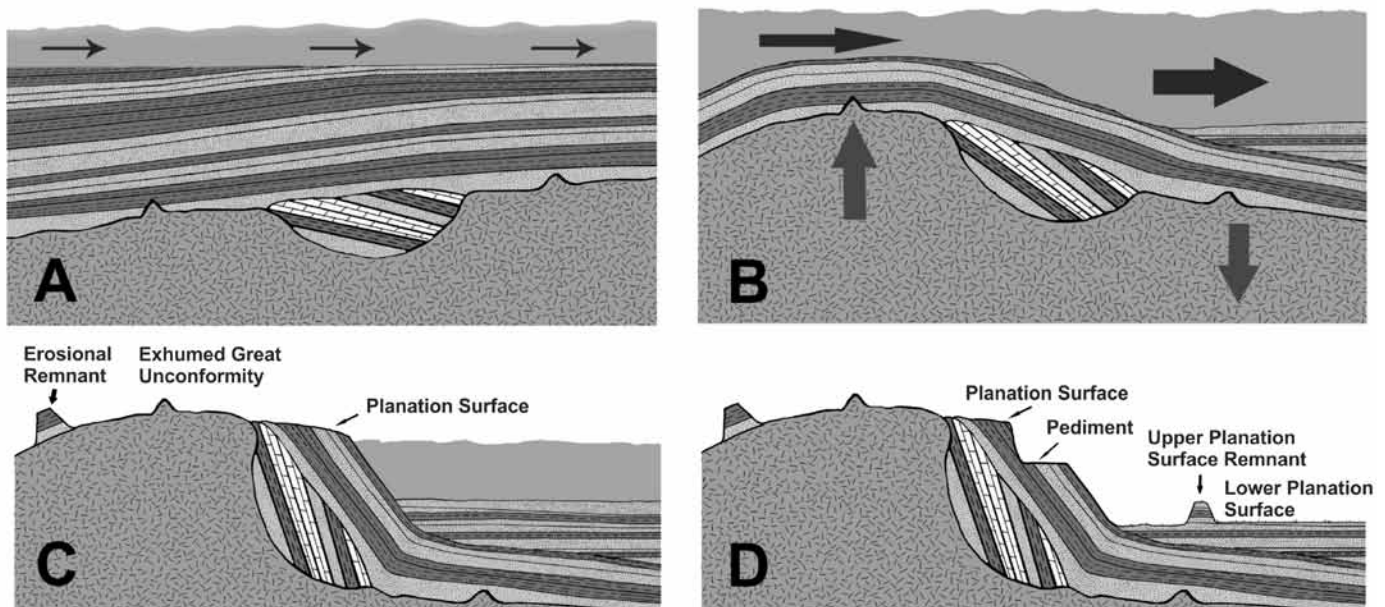


Figure 34. Schematic of the retreating stage of the Flood (drawn by Mrs. Melanie Richard). (A) The end of the flooding stage. (B) The mountains rise and the valleys sink down. (C) The Great Unconformity exhumed, eroded sediments fill valley, and planation surfaces are formed in the strongly tilted sedimentary rocks. (D) The terrain today.

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Classic Reprints

Editor's Introduction:

For more than 50 years the Creation Research Society has pursued and supported original research verifying the creation model of origins as a means to reveal the Creator. In our flagship publication, the *Creation Research Society Quarterly*, we disseminate scholarly articles that affirm the creation model and refute evolutionary origins.

It is appropriate that we also review the origins of our society. With this issue we begin to feature classic research papers that have appeared in the pages of the *Creation Research Society Quarterly*.

The papers we will feature will either have historic significance or still provide relevant insight today.

The first paper we feature does both.

Theistic evolution is a very popular sub-model of evolution. In 2017, a Gallup poll revealed that 38% of the American public accepts theistic evolution. (This is the same number, 38%, of Americans who subscribe to the creation model.) Many Christians look for ways to compromise and harmonize the Bible with the ideas of materialistic evolution.

The ordinary reading of Genesis does not allow for a long “gap” of time between Genesis 1:1 and 1:2, although some try to force such a gap into the passage. Some look for a gap since they believe it would allow evolutionary ideas into the biblical text.

Is there a gap in Genesis 1? Dr. John Whitcomb, then of Grace Theological Seminary, Winona Lake, Indiana, addressed the issue in this insightful article for Vol. 2, No. 1 (May 1965) of

the CRSQ. Dr. Whitcomb rejects the “gap theory” based upon biblical and scientific evidence.

It is important to note that while our commitment to biblical creation has not changed over the decades, some details of what we believe have changed. For instance, this paper and the introductory comments of the first president of the Creation Research Society expressed doubts about the reality of the geologic column. Most creation geologists today accept the geologic column as a useful tool in describing the progression of rock layers and fossils around the world. However, creation geologists disagree with the interpretation that those rocks and fossils formed gradually over great time. Rather, creation geologists think that most rocks and fossils are better explained in terms of recent creation and the Genesis Flood.

In his overview of the May 1965 issue, Dr. Walter Lammerts, the first president of the Creation Research Society, introduced Dr. Whitcomb's paper as follows:

Our correspondence [with others interested in the viewpoint of the CRS—ed.] during the year has indicated a considerable amount of confusion as to our viewpoint on such propositions as the “gap theory” and “progressive creation” involving long periods of time. Accordingly, we have invited one of our distinguished sustaining members, Dr. John C. Whitcomb, to show that there simply is no justification for the “gap

theory” from the viewpoint of sound scriptural exegesis.

Personally, I am always rather amused at our good friends the theologians who labor so hard to prove that the word “day” really doesn't mean day! I doubt if a single Christian layman in the days when my father was young, or even many now, ever thought that the word “day” could mean anything other than a solar one of about 24 hours. As Shakespeare said, “Verily much learning hath made thee mad!” After reading so much nonsense on this subject, it is refreshing to have such clear-cut discussions from two of our eminent theologians.

Though, of course, we make no attempt to give the *exact* date of creation, since we were not there and the Bible is silent on this matter, it is quite obvious that it does not give any room for concepts involving millions or even hundreds of thousands of years. We are convinced from careful study of all the facts that there is simply no objective validity to the so-called “geologic column.” Radioactivity estimates involve so many assumptions they are simply not credible evidence *unless* tied up with the validity of the “geologic column.” Samples of various pegmatites, for example, give so many “anomalous” ages along with the “consistent” ones that only by establishing a “norm” of age range based on “other geological considerations” is it possible to “date” stratified rocks.



Classic Reprints

The Ruin-Reconstruction Theory of Genesis 1:2

John C. Whitcomb, Jr.*

Introduction

Students of the Bible have long debated the question of whether the original creation of the heavens and the earth is to be understood as an event within the first “day” of creation, or whether a vast period of time could have elapsed between the original creation of Genesis 1:1 and the “waste and void” condition described in Genesis 1:2. Most theologians who favor a time gap between these two verses believe that the original earth was populated with plants and animals (and perhaps even men), and because of the fall of Satan it was destroyed by God. The vast ages of the geologic timetable are thought to have occurred during this interval, so that the fossil plants and animals that are found in the crust of the earth today are relics of the original world that was destroyed before the six literal days of creation (or, rather, re-creation) recorded in Genesis 1:3–31.

The “ruin-reconstruction theory,” or “gap theory,” has been widely accepted among Christians who interpret

the book of Genesis in the traditional historical-grammatical method, especially since the early nineteenth century when Thomas Chalmers of England advocated this interpretation as a means of harmonizing the Genesis account of creation with the vast time periods of earth history demanded by uniformitarian geologists.¹ The differences between the “gap theory” and the traditional view of a recent creation of the earth within six literal days are quite profound and may be outlined as follows: (1) The gap theory permits Christians to accept without question the complete validity of the timetable of uniformitarian geologists. (2) The gap theory leaves us with no clear word from God as to the original world—the time involved in its creation, the arrangement of its features,

¹ As early as 1814 Dr. Chalmers, of Edinburgh University, was promoting the views of George Cuvier and became the first great popularizer of the “gap theory” (see Chalmers, n.d.; Haber, 1959).

or its pre-judgment history—for instead of having the entire first chapter on this important subject, we have only the first verse. (3) Because all the animals of the first world were destroyed and fossilized, they have no relation to the animals of the present world, in spite of the fact that many of them appear to be identical in form to modern types. Likewise, those who would place human fossils into the “gap” are forced to the conclusion that such pre-Adamic “men” did not possess an eternal soul (Archer, 1964, pp. 201–204). (4) The gap theory redefines the “very good” of Genesis 1:31 (“God saw everything that he had made, and, behold, it was very good”), for Adam would have been placed as a very late arrival into a world that had just been destroyed, so that he was literally walking upon a graveyard of billions of creatures over which he would never exercise dominion (1:26). Furthermore, the earth would already have become the domain of a fallen and wicked angel who is described elsewhere in Scripture as “the god of this world” (2 Cor. 4:4).

Obviously, then, the gap theory is not a minor deviation from the traditional interpretation of the Genesis creation account. For this reason, the biblical evidences that have been set forth in its

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defense need to be carefully examined. The four most frequently used evidences are these: (1) The verb translated “was” in Genesis 1:2 (Heb. *hayetha*) can just as well be translated “became”; thus, the idea of a profound change in the earth’s condition is permitted. (2) The phrase “waste and void” (Heb. *tohu wa-bohu*) appears elsewhere only in Isaiah 34:11 and Jeremiah 4:23, and the context of those passages speaks clearly of judgment and destruction. Furthermore, the word *tohu* by itself frequently has an evil connotation. (3) It is highly improbable that God, the Author of light, would have originally created the world in darkness, which is generally used in Scripture as a symbol of evil. (4) There seems to be a definite distinction in the first chapter of Genesis between “created” and “made,” thus permitting us to assume that many of the things mentioned in this chapter were simply re-created.

“Was” or “Became”?

The first supporting argument for the gap theory is that the Hebrew verb *hayetha* in Genesis 1:2 may be translated “became,” thus implying a tremendous transition from perfection to judgment and destruction. It is true that there are six instances in the Pentateuch where this verb is translated “became” (Gen. 3:22; 19:26; 21:20; Exod. 7:19; 8:17; 9:10). In each of these cases, however, the context clearly shows that a change of state has occurred. The same verb appears 258 other times in the Pentateuch and in each case is to be translated “was.” Because Genesis 1:2 lacks contextual support for translating this verb “became,” no English version of Genesis has ever translated it this way. One graduate student questioned twenty of the leading Hebrew scholars of America concerning the exegetical evidence for a gap in Genesis 1:2. They unanimously replied that there was no such evidence (Gedney, 1950, p. 49). The clearest way to have conveyed the idea of a change

of state would be to follow the verb *hayetha* with the preposition “to” (*lamedh*), as was done in Genesis 2:7 (“and man *became* a living soul”) and in 25 other verses in the Pentateuch. But this preposition does not appear after the verb in Genesis 1:2.

Furthermore, the sentence structure suggests that the earth’s condition in verse 2 is just as God created it in verse 1, for we have an exact grammatical parallel in Jonah 3:3: “Jonah arose, and went into Nineveh...Now Nineveh was an exceeding great city.” Obviously, Nineveh did not *become* a great city after Jonah entered it. Dr. F. F. Bruce points out that if verse 2 indicated an event subsequent to the creation of verse 1, we might have expected in verse 2 a “*waw* consecutive” with the imperfect tense instead of a “*waw* copulative” with the perfect (i.e., *wattehi ha-arets* instead of *we-ha-arets hayethah*) (Bruce, 1946, pp. 21–23). In the light of this evidence, it appears that the passage is not speaking of a change in the earth’s condition due to a catastrophe but is simply describing the earth as it came into existence through God’s creative word.

“Empty” or “Chaotic”?

This brings us to the second important argument in support of the gap theory. If Genesis 1:2 describes the earth’s condition at the time of creation, how do we explain the phrase “waste and void” (*tohu wabohu*)? Would an infinitely wise and powerful God have created the earth in such a chaotic condition? The only other places in the Bible where the two words *tohu* and *bohu* appear together (Isa. 34:11 and Jer. 4:23) are passages that speak of divine judgment upon Gentile nations and upon Israel. Does not this indicate that these words must refer to judgment and destruction in Genesis 1:2? Even the word *tohu* (translated “without form” in the KJV and “waste” in the ASV), in the twenty verses where it appears without *bohu* in

the Old Testament, is sometimes used in an evil sense.

This is admittedly an impressive argument, for one of the most dependable ways to ascertain the meaning of Hebrew words and phrases is to compare their usage in other passages. Thus, if *tohu* always refers to something evil when used elsewhere in the Old Testament, it would probably have this connotation in Genesis 1:2. But a careful examination of the usage of this word does not support such a meaning. For example, in Job 26:7 we read that God “stretcheth out the north over *empty space* (*tohu*), and hangeth the earth upon nothing.”² Certainly, we are not to find in this verse any suggestion that outer space is basically evil. In some passages the word refers to the wilderness or desert, which is conspicuous for its absence of life (Deut. 32:10; Job 6:18; 12:24; Ps. 107:40). In most of the places where the word appears in Isaiah, it is paralleled with such words as “nothing” and “nought.”

Of particular interest in this connection is Isaiah 45:18, which has been used as an important proof-text for the gap theory. The verse tells us of “the God that formed the earth and made it, that established it and created it not a waste (*tohu*), that formed it to be inhabited.” It has been claimed that the *tohu* condition of the earth in Genesis 1:2 could not have been its original condition, because Isaiah 45:18 says it was *not* created a *tohu*. Consequently, God must have originally created an earth replete with living things and later destroyed it, causing it to *become tohu*. However, such an interpretation overlooks the true significance of the final phrase in this verse: “formed it to be inhabited.” The real point of the passage seems to be that God did not ultimately intend that the world should be devoid of life,

² All Scripture quotations are from the American Standard Version (ASV) of the Bible.

but rather that it should be filled with living things. Thus, He did not allow it to *remain* in the empty and formless condition in which He first created it but in six creative days filled it with living things and fashioned it as a beautiful home for man. The verse thus speaks of God's ultimate purpose in creation, and the contrast in this verse between *tohu* and "inhabited" shows clearly that *tohu* means empty or *uninhabited*, rather than judged, destroyed, or chaotic.

To be sure, the only passages besides Genesis 1:2 where *tohu* and *bohu* appear together—Isaiah 34:11 and Jeremiah 4:23—are placed in contexts that emphasize divine judgment. But even here the basic meaning of *empty* or *uninhabited* fits well. Since God's ultimate purpose for the earth, and particularly the Holy Land, was that it might be *filled with people* (Isa. 45:18; 49:19–20; Zech. 8:5), it would be a clear evidence of His wrath and displeasure for the Promised Land to become *empty* and *uninhabited* again. The concept of emptiness, therefore, implies divine judgment only when it speaks of the removal of something that is good. On the other hand, when emptiness follows something that is evil, it can be a comparative blessing! An example of this may be found in Christ's work of casting demons out of people (Luke 8:35; cf. Matt. 12:44—"empty, swept, and garnished").

In spite of the fact that the phrase *tohu wa-bohu* appears elsewhere in judgment contexts and thus takes on an evil connotation in those passages, the same phrase may have a very different connotation when it appears in a different context. Even advocates of the gap theory admit that a context of divine judgment seems to be missing in the opening verses of Genesis (Mitchell, 1962, p. 45). It is true that the earth was *empty* as far as living things are concerned, and it was devoid of many of the interesting features it later possessed, such as continents, mountains, rivers, and seas; but it was certainly not

chaotic, ruined, or judged. Edward J. Young feels that "it would probably be wise to abandon the term 'chaos' as a designation of the conditions set forth in verse two. The threefold statement of circumstances in itself seems to imply order. The material of which this earth consists was at that time covered with water, and darkness was all about. Over the water, however, brooded God's Spirit" (Young, 1964, p. 13).

Was the Darkness Evil?

The third major argument used in support of the gap theory concerns the darkness of Genesis 1:2. Since darkness is almost always used as a symbol of sin and judgment in the Scriptures (John 3:19; Jude 13; etc.), and since God did not say that the darkness was "good" (as He did concerning the light—Gen. 1:4), we must assume that God originally created the world in light (Ps. 104:2; 1 Tim. 6:16) and only later plunged it into darkness because of the sin of angels and Satan.

This, again, is an impressive argument. But all the biblical evidences need to be taken into consideration. Psalm 104:19–24, for example, makes it quite clear that *physical* darkness (absence of visible light) is not to be considered as inherently evil or as the effect of divine judgment. Speaking of the wonders of the day-night cycle, the psalmist states: "The sun knowest his going down. *Thou makest darkness*, and it is night, wherein all the beasts of the forest creep forth. The young lions roar after their prey, and seek their food from God . . . O Jehovah, how manifold are thy works! In wisdom hast thou made them all: the earth is full of thy riches." If the making of darkness is a revelation of God's wisdom and riches, how can it be inherently evil?

In discussing the opening verses of Genesis, Dr. Young points out the true significance of the term "darkness":

God gives a name to the darkness, just as he does to the light. Both are

therefore good and well-pleasing to him; both are created, although the express creation of the darkness, as of other objects in verse two, is not stated, and both serve his purpose of forming the day . . . Darkness is recognized in this chapter as a positive good for man. Whatever the precise connotation of the "evening" of each day, it certainly included darkness, and that darkness was for man's good. At times, therefore, darkness may typify evil and death; at other times it is to be looked upon as a positive blessing. (Young, 1964, pp. 21, 35)

It would seem reasonable to assume that the reason why God did not *see* that the darkness was good is that darkness is not a specific entity, or a thing, but it is rather an absence of something, namely, light. Perhaps it is for this same reason that God did not see that the "firmament" (expanse) of the second creative day was good. It, too, was a rather negative entity, being the empty space between the upper and lower waters. The fact that physical darkness is not incompatible with the presence and blessing of God is evidenced by the statement that "the Spirit of God moved upon the face of the waters" in the midst of this primeval darkness. In the words of the psalmist, "Even the darkness hideth not from thee, but the night shineth as the day: the darkness and the light are both alike to thee" (Ps. 139:12).

How Many Creative Acts in Genesis 1?

The fourth major supporting argument for the gap theory is built upon a supposed distinction between the verbs "created" (*bara*) and "made" (*asah*). For example, the second footnote in the *Scofield Reference Bible* states: "But three *creative* acts of God are recorded in this chapter: (1) the heavens and the earth, v. 1; (2) animal life, v. 21; and (3) human life, vs. 26, 27. The first creative act refers to the dateless past, and gives

scope for all the geologic ages” (Scofield, 1917). Thus, the vegetation of Genesis 1:11 was not *created* on the third day but was simply “brought forth” from the earth again following the catastrophic judgment of Genesis 1:2. Likewise, the sun, moon, and stars of Genesis 1:16 were not actually *created* on the fourth day but were simply “made to appear” through the thick, dark clouds that covered the earth following its devastation.

It is true that the verb “made” (*asah*) in Genesis 1:16 (“God made the two great lights”) is not the same as the verb “created” in Genesis 1:1. Nevertheless, it seems rather obvious that these two verbs are used synonymously throughout the chapter, for God “created” (*bara*) the great sea monsters (v. 21), and He “made” (*asah*) the beasts of the field (v. 25). Surely we are not to find any significant difference here. The sea monsters were created supernaturally by God, and so were the beasts of the earth. Likewise, in 1:26 God said, “Let us *make* man in our image.” But in the next verse we read that God “*created* man in his own image.” Once again, the verbs seem to be used synonymously. Therefore, 1:16 must refer to the *original* creation of the sun, moon, and stars. If God had intended to convey to us the idea that these heavenly bodies were created on the first day, or earlier, but only “appeared” on the fourth day (presumably by a removal of clouds), the verb “to appear” could easily have been used (see v. 9). Similarly, when we read that God commanded the earth to “put forth” grass, herbs, and fruit trees, we are to understand this as referring to their supernatural creation; even as God’s command to the waters to “swarm with swarms of living creatures” (v. 20) is explained in the following verse to mean that “God *created* (*bara*) . . . every living creature that moved, where-with the waters swarmed.” For the sake of variety and fullness of expression, then, different verbs are used to convey the concept of supernatural creation. The context makes it clear that these verbs

are used synonymously throughout the chapter, so that not only animal life and human life, but also plant life and the heavenly bodies were created by God in their appropriate days.

Other Arguments

In addition to the four major arguments, it is also claimed that the phrase “replenish the earth” in Genesis 1:28 implies that the earth was once filled but now had to be filled *again* (re-plenished, or re-filled). But the verb in the Hebrew text (*maleh*) simply means “to fill,” with no suggestion of repetition.

It is also frequently claimed that Ezekiel 28:13–14 demands an originally glorious world before the “waste and void” of Genesis 1:2, for it speaks of Satan as dwelling in “Eden, the garden of God . . . the holy mountain of God” and walking “up and down in the midst of the stones of fire” before his rebellion against God. But it seems clear from a comparison with Daniel 2:45 and Isaiah 14:13 that “the holy mountain of God” must refer to the third heaven of God’s immediate presence and not to an earthly domain. It should be noted that Satan was “cast . . . out of the mountain of God . . . to the ground” (Ezek. 28:16–17; cf. Isa. 14:12). Apparently, the Lord Jesus Christ spoke of this event when He said, “I beheld Satan *fallen* as lightning *from heaven*” (Luke 10:18). It should also be noted that “Eden, the garden of God” was not a garden with trees, flowers, and streams. It was composed of precious stones and “stones of fire” (Ezek. 28:13, 14, 16). When we compare this with the description of the Holy City of Revelation 21:10–21, with its various precious stones, we must conclude that Ezekiel’s “garden of God” refers not to an earthly Eden back in Genesis 1:1, but to a heavenly one, from which Satan was cast down to the earth. When God created the “heavens” at the beginning of the first day of creation week, He apparently created all the angelic beings

(including the unfallen Satan), who were thus on hand to sing together and shout for joy at the creation of the earth (Job 38:7). Sometime after creation week and before the temptation of Eve, Satan rebelled against his Creator. The visible earthly effect of his fall would thus not have been a catastrophe in Genesis 1:2, but the Edenic curse of Genesis 3, which God inflicted upon the entire earth because Adam and Eve chose to believe and obey Satan rather than God (Rom. 8:20–23).

Six Days of Creation

One clear biblical proof that creation week was *not* preceded by a divine judgment is found in Exodus 20:11. In this fourth commandment, God said to Israel: “Six days shalt thou labor, and do all thy work . . . for in six days Jehovah made heaven and earth, the sea, and all that in them is.” The gap theory holds that the heavens, the earth, and the sea were created *before* the six days of Genesis 1. But this passage asserts that *everything* was made by God *in six days*. The fact that the verb “made” (*asah*) is used here does not mean that the earth was “refashioned” in six days, for we have already seen that this verb is synonymous with *bara* when used in a creation context.

We would agree with advocates of the gap theory that “the earth has undergone a cataclysmic change as a result of a divine judgment. The face of the earth bears everywhere the marks of such a catastrophe” (Scofield, 1917, footnote 3 on Genesis 1:2). But we would identify this catastrophe with the great universal flood of Noah’s day, which not only occupies three entire chapters of Genesis, but also is referred to by David (Ps. 29:10), Isaiah (Isa. 54:9), Christ (Matt. 25:39), and Peter (1 Pet. 3:20; 2 Pet. 2:5; 3:6). It was through the vast and complex current patterns of this year-long deluge that the living creatures of the entire world were buried forever

in the great fossil strata that encircle the globe (see, e.g., Whitcomb and Morris, 1961; Klotz, 1955; Zimmerman, 1959; Morris, 1963). It is *this* catastrophe that provides for us the God-given answer to the false uniformitarianism of these last days (2 Pet. 3:4) and thus effectively foreshadows the final universal destruction of all things by fire at the climax of the day of the Lord.

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Minutes of the 2017 Creation Research Society Board of Directors Meeting

The fifty-fourth annual Creation Research Society (CRS) board of directors meeting was held at Concordia University in Mequon, Wisconsin from Thursday 8 June through Saturday 10 June 2017.

The board completed a number of tasks via the following activities. The lab committee held an extended meeting Thursday afternoon. The entire board met Thursday evening to consider preliminary matters. All of the standing CRS committees met during the day on Friday. A friend of CRS who is an expert in promotion shared a special presentation Friday afternoon. The board enjoyed a traditional Wisconsin fish fry Friday evening. Board members were invited presenters for a meeting of the Creation Science Society of Milwaukee on current CRS research including iDino and eKinds (this event was open to the public). The entire board met on Saturday to finalize the year's business and planning.

The following board members were present: Rob Carter, Gene Chaffin, Don DeYoung, Danny Faulkner, Robert Hill, Russ Humphreys, Jean Lightner, Gary Locklair, Michael Oard, John Reed, Ron Samec, and Glen Wolfrom. VACRC director Kevin Anderson and professional staff member Diane Anderson were also present.

Highlights of board activities and actions are presented here.

Rob Carter led a devotion based upon Ephesians 3:8. Rob encouraged us to further the mission by presenting the gospel via the truth of creation. We are awed by the history and the "great cloud of witnesses" who came before us. We



CRS Board members. L-to-R back row – Gene Chaffin, Kevin Anderson*, Ron Samec, Rob Carter, Russ Humphreys, Bob Hill, Tim Clarey, Gary Locklair

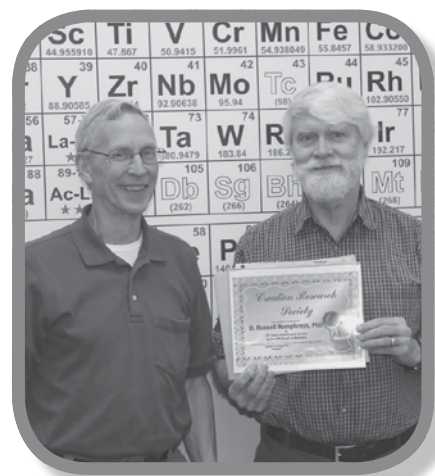
L-to-R front row – Jerry Bergman, Mike Oard, Don DeYoung, Glen Wolfrom, Diane Anderson*, Jean Lightner, Danny Faulkner

* CRS staff, not board members

respond to our heritage by continuing to run the race.

The board reflected on the special presentation about promotion held early Friday afternoon. It was agreed that a business plan is needed to propel us into the future.

Gary Locklair, Internet committee chairman, reviewed our current online presence (website, Facebook page, CRSnet listserv email reflector). Board discussion about CRSnet determined that the moderator has the support of the board to handle any situation that arises. There are rules governing the use of CRSnet that have been published. The new CRS website was reviewed. The board thanked CI-Design for the website redesign and our volunteer webmaster, Fred Williams.



Dr. Russ Humphreys (R) receives a certificate from board president Dr. Don DeYoung in recognition of his years of service.

Gene Chaffin, periodicals committee chairman, shared information relating to the *Creation Research Society Quarterly* (CRSQ) and *Creation Matters* (CM). The CRSQ is behind its publication schedule. He presented strategies to restore the Q to an on-time publication schedule. CRSQ editor Danny Faulkner presented a plan to place accepted articles online for members prior to physical publication. Danny encouraged board members to submit for publication. CM editor Glen Wolfrom noted that CM continues to be well received by the membership and includes a wide variety of articles. Jean Lightner has begun summarizing research articles in CRSQ for CM.

Mike Oard, publications committee chairman, presented information about book sales and the state of eBooks and print-on-demand for the Society. Mike believes that preapproval for books is a vital step in the process. It was noted that we have stopped producing a hardcopy book catalog.

Glen Wolfrom, membership committee chairman, provided information on the state of the Society. The CRS consists of 1590 members with 649 being voting members. In addition to members, the Society has subscribers (either institutions or those who do not accept our membership statement). Membership has increased slightly each year for the past 4 years. Our most recent year-to-year retention rate was 63%, a very good figure. The last fee increase was 2012 (and before that 2007). It was moved/seconded/approved to increase all paperless rates by \$2 and all other rates by \$5 per year. This will take effect in June 2018.

After 32 years as membership secretary, Glen Wolfrom is stepping down at this meeting. The board thanked Glen for his exemplary service and noted that the CRS has had only two membership secretaries in its 55-year existence!

Gene Chaffin, research committee chairman, presented information on the



The full board discusses matters of strategic importance to the Society.



In conjunction with the Creation Science Society of Milwaukee, members of the CRS shared highlights of current research.



Board members hosted a star-party for the public Friday evening.

approved research projects this year. A significant gift was received that will be used to fund several geology research projects. He reminded us that last year we approved student research grants, and this year we have our first student grant recipient.

Gary Locklair, constitution committee chairman, asked everyone to update their job descriptions. Diane Anderson will assist with the update. There was discussion of the current constitution and bylaws. The board decided to keep everything in the current constitution rather than removing some content and placing it into our bylaws.

Treasurer Danny Faulkner reported that the Society operated at a small deficit this fiscal year. He emphasized the need to repay our internal borrowing from our endowments.

Financial secretary Bob Hill shared that we trimmed our budget by \$8,500 over the previous year. He shared the financial report on our investments held

by Raymond James. The board authorized the financial secretary to reinvest \$10,000 from our bank account into an investment instrument. Danny Faulkner mentioned that the Society should be operating off the interest generated and the endowment directly.

The board approved an expense budget of \$273,200 for the coming fiscal year. The board authorized Diane Anderson to withdraw up to \$20,000 of funds without executive committee action. Usually a withdrawal is to assist with Society cash flow concerns.

The board submitted the names of Jerry Bergman, Gene Chaffin, Jean Lightner, John Reed, and Glen Wolfrom as candidates for the 2018 election of board of directors.

Election of board officers resulted in the following:

President – Don DeYoung,
Vice-president – Gene Chaffin
Recording secretary – Gary Locklair

The following officers were confirmed for the third year of their three-year term:

Financial secretary – Bob Hill
Treasurer – Danny Faulkner
Membership secretary – Rob Carter
(filling out the term for Glen Wolfrom)

Subsequent to the board meeting, Mark Horstemeyer was nominated for a board position. The 2018 election will include 6 names on the ballot for 6 board positions.

Dr. Russ Humphreys was honored for his 25 years of service to the board.

The next annual meeting of the CRS board of directors will be 31 May through 2 June 2018 at the VACRC in Arizona.

**Respectfully submitted,
Prof. Gary Locklair, PhD
CRS Recording Secretary**



Notes from the Panorama of Science

Something Fishy about Radiocarbon-Dating Viking Bones

Our bones are scattered at the mouth of the grave, as when one plows and breaks up the earth. (Psalm 141:7 NKJV)

It's hard to understand why serious amounts of radioactive Carbon 14 are "missing" in Viking bones, unless one realizes that much of it was never there to start with.

Moreover, readers of the *Creation Research Society Quarterly* should appreciate how this radiometric dating controversy is relevant to how evolutionists study ancient origins. Indeed, conventional radiocarbon-dating methodology obscured the proper understanding of an archeological site in Repton, England, for more than three decades, illustrating how bad science corrupts our understanding of the otherwise knowable past.

As Viking historian John Haywood has documented (Haywood, 1995, pp. 62–63), the "Great Heathen Army" invaded England, from Scandinavia, during the latter part of the AD 800s (specifically, the 860s and 870s), replacing previous Viking "hit-and-run" raids with seizure and occupation of English lands. Nordic Vikings by the thousands arrived, with every intention of staying! Viking historian Simon Keynes (Keynes, 1999, p. 52–55) notes:

The raids on England escalated further [i.e., escalated beyond quick hit-and-run plundering] in 865/6, when 'a great heathen army' took up winter quarters in East Anglia. ... The leaders appear to have included Ivar the Boneless and his brother Halfdan, sons of the [Danish Viking] Ragnar

Lothbrok, as well as another 'king' called *Bagsecg*, and several 'earls' ... The annals in the *Anglo-Saxon Chronicle* afford a good sense of the course of the [great heathen] army's campaign in the late 860s, as it moved [often on horseback] from East Anglia into Northumbria in 866, from Northumbria into Mercia in 867, and back north into Northumbria in 868, before returning via Mercia to East Anglia in 869. ...

The disarticulated [skeletal] remains of at least 250 people (mainly men in their prime, but also including some women), from the charnel excavated at Repton, Derbyshire, in 1980–6 ... [appears to represent the Great Heathen Army] known to have wintered at Repton in 873–4; and it has been suggested that the charnel represents the mass burial of members of the army who died at this time from an epidemic of some kind.

Ironically, after some three decades of scientific controversy, skeletal remains of those vicious Vikings, tested by radiocarbon methods, have illustrated once again that conventional radiocarbon-dating is not the always-accurate-and-authoritative "sacred cow" we have been told that it is.

For example, in other radiocarbon-dating contexts, evolutionists have been recently embarrassed by the presence of Carbon 14 (a/k/a C-14 or ^{14}C) in coal, oil, fossilized wood, natural gas samples, and even in many kinds of dinosaur bones, where evolutionary theories do not permit C-14 to be (Hebert, 2013; Thomas and Nelson, 2015)!

In this study, however, it is the proportional *lack* of Carbon 14 that presents a radiocarbon-dating problem to the empirical scientists who have glibly dismissed the applicational relevance of forensic science principles while asserting that conventional radiocarbon-dating methods must "tell us the past."

For decades, in reviewing the Repton remains, the chronometrical question has been:

Can we confidently use conventional Carbon 14 radiometric dating, *on disinterred skeletons*, to discern when someone died, centuries ago?

If a portion of the expected C-14 is "missing" in what forensic evidence suggests is a Viking skeleton, could it be that it never was there in the first place? In particular, must we sometimes qualify some C-14 testing outcomes by eyewitness reports that describe the deceased's diet? As we shall see, investigating this question requires collecting empirical science data, yet the ultimate answer requires forensic science analysis, including verified reports from reliable eyewitnesses (Johnson and Tomkins, 2015; Ham, 1989).

The basic problem, as forensic scientist Johnson puts it, involves the comparative merits of *empirical science* versus *forensic science* for determining the facts about no-longer-observable events of the past:

Do we need reliable eyewitness reports to know the real truth about non-repeating historic events? In a word, yes. After the fact, historical causes routinely leave behind physical effects, often with observable characteristics such as fingerprints,

tire-tread impressions, or DNA. These can provide reliable inferences about what occurred at a specific location and time ... [yet], for complete accuracy, there is nothing like a reliable eyewitness [who] can report relevant observations—about who, what, how, or why—that otherwise could leave a mystery misunderstood or unsolved. ... Eyewitness testimony relies upon honesty, opportunity to observe, an accurate memory, and testimonial clarity. These forensic principles apply to the challenging task of reconstructing unique actions that happened in the past, because these events (unless recorded on film or video) can't be seen in the present. This applies to learning about past occurrences as different as the sinking of a German warship or how sea creatures got fossilized along with land-roaming dinosaurs. (Johnson, 2016)

When (and how) a particular human died, of course, is a specific question of history, so eyewitnesses are needed to guide investigators seeking an answer to that unique question (Johnson and Tomkins, 2015; Johnson, 2012, 2014).

Consider the case of a mass burial of about 249 or 250 skeletons in Derbyshire, England. Do these skeletons represent Vikings who belonged to the Great Heathen Army [Old English: *mycel hæþen here*], Scandinavian warriors who overwintered in the Derbyshire village of Repton during AD 873/874?

Because eyewitnesses indisputably reported the Great Heathen Army's historical presence, then and there, many modern historians, such as John Haywood (Haywood, 1995), have concluded that the 249+ mass-grave skeletons (in Derbyshire) were those of Scandinavian Vikings who invaded England as the "Great Heathen Army" during AD 865–879.

However, Jarman and others (Jarman et al., 2018) have reported how some empirical science investigators, using

conventional radiocarbon-dating methods, repeatedly rejected that time frame (i.e., the latter AD 800s) as matching the buried bones, arguing that the bones must be a century or so older, based upon the residual C-14 found inside the unearthed bones.

Specifically, archeologist Catrine Jarman and others summarized this chronology controversy as follows:

Archaeological evidence for the Viking Great Army that invaded England in AD 865 is focused particularly on the area around St. Wytan's church in Repton in Derbyshire. Large numbers of burials excavated here in the 1980s have been attributed to the over-wintering of the Great [Heathen] Army in AD 873–874. Many of the remains were deposited in a charnel, while others were buried in graves with Scandinavian-style grave goods. Although numismatic [i.e., minted coins] evidence corroborated the belief that these were the remains of the Great Army, radiocarbon results [which were routinely interpreted at chronology ranges in the AD 600s or 700s] have tended to disagree. (Jarman, et al., 2018, p. 1)

So, who was right, and who was wrong?

Did the disinterred bones belong to men who died in the AD 600s or 700s? If so, why was there no historical record of a Viking army occupying Derbyshire during that time?

But if the hundreds of Nordic skeletons were more recent, representing deaths that occurred during the latter half of the AD 800s (consistent with the time when the Great Heathen Army was occupying Derbyshire and its environs), why did the radiocarbon measurements suggest that those buried had died a century or more before Derbyshire was overwhelmed by hundreds of Scandinavian Vikings?

Notice that England's historical records not only provided eyewitness

accounts of the Great Heathen Army invading and occupying Derbyshire by the thousands during the late AD 800s, but those historical records also indicate that such activities were *not* occurring during earlier centuries. In other words, Derbyshire was virtually free of seafaring Nordic invaders during the AD 600s and 700s (Haywood, 1995; Jarman et al., 2018).

As a forensic science problem, the radiometric dating results clashed with all the available eyewitness accounts, proving that something was wrong with either the historical records or the radiocarbon analysis. Were the eyewitness accounts in error? Or was the radiometric dating methodology invalid?

Of course, Carbon 14 radiometric dating methods utilize several assumptions (Hebert, 2013; Morris, 2007; Thomas and Nelson, 2015). So, if one of the basic assumptions is invalid (i.e., incorrect), the conclusions that rely on that erroneous assumption will likewise be invalid (i.e., incorrect).

Could it be that one of the conventional methodology assumptions used in C-14 radiometric dating is *wrong* for measuring time-of-death data for human skeletons such as those deposited in the mass grave at Repton in Derbyshire?

To answer this question, consider the basic logic underlying radiometric dating. John Morris, veteran geologist/paleontologist, has outlined the basic assumptions of conventional radiocarbon dating methodology:

The carbon-dating technique cannot be used to date rocks ... but it can be used to date things that were once living—things that contain carbon. Here's how it works. Sometimes nitrogen 14 changes into carbon 14 high in the atmosphere [where sunlight contacts air]. Over time, however, the carbon 14 decays back into nitrogen 14. Since plants "breathe" [i.e., take in] carbon dioxide, their leaves, stems, and seeds contain some carbon 14 in

their structures along with the more common isotope, carbon 12. Once they stop living, they stop taking in new carbon 14 [via photosynthesis processes that require the plants to be living] and the unstable carbon 14 already there [especially in the form of digestible carbohydrates] begins to decay back into nitrogen 14, while the stable carbon 12 remains. By measuring the amount of carbon 14 left sometime after the plant dies, you can calculate (in theory) how long ago the plant died.

Since animals eat plants [or eat animals that eat plants], their deaths can be dated in the same way. (Morris, 2007, p. 50)

And, it is assumed, humans acquire (and release) C-14 the same as do animals.

Thus, the “normal” radiometric dating scenario presumes that human skeletons will contain organic material—with steadily decaying Carbon 14—that is traceable to plant photosynthesis that incorporated atmospheric carbon dioxide into plant carbohydrates, such as fruit sugars or starches within grains or root vegetables (Morris, 2007; Arneborg et al., 1999).

Moreover, as herbivores graze on plant food, radiocarbon within photosynthesis-fixed carbohydrates can be converted metabolically into animal proteins—such as amino acids derived from eating terrestrial livestock like cattle, sheep, goats, or swine (Morris, 2007; Jarman et al., 2018). So, humans can acquire C-14 directly, from eating plants, as well as indirectly, from eating herbivores—or from eating carnivores who ate herbivores (Morris, 2007; Arneborg et al., 1999; Jarman et al., 2018).

Notice that the vital assumption here, which quickly affects the mathematics of radiometric dating, is that human skeletons contain residual Carbon 14 acquired from predominantly “terrestrial” (i.e., land-food-based) diets (Arneborg et al., 1999; Jarman et al.,

2018). However, as Jette Arneborg and others clarify, eating lots of finfish (such as cod, salmon, trout, herring, etc.) and/or shellfish (such as shrimp or crab) nixes that vital assumption (Arneborg et al., 1999)!

What kind of diet were the Scandinavian Vikings known for, according to eyewitness-based historical records? *Seafood, especially fish—and lots of it!* And don’t look for fish to have the same concentration of Carbon 14 that one receives from eating bread, beef, beets, or dairy products (Arneborg et al., 1999; Jarman et al., 2018).

Meanwhile, the metabolic difference in Carbon 14 between “terrestrial” and “marine” diets requires that radiocarbon dating methods be adjusted to account for how a mostly marine (i.e., fish-dominated) diet produces human radiocarbon counts that are much less than diets comprised of mostly terrestrial (i.e., more plant-derived) foods.

This dietary reality is discussed below in a radiocarbon study of bones from Greenland Vikings, whose habit of eating fish (and other seafood) is historically well documented (and undisputed).

Archeologist Jette Arneborg and others note:

Bone samples from the Greenland Viking colony provide us with a unique opportunity to test and use ^{14}C dating of remains of humans who depended upon food of mixed marine and terrestrial origin. We investigated the skeletons of 27 Greenland Norse people excavated from churchyard burials from the late 10th to the middle 15th century. The stable carbon isotopic composition ($\delta^{13}\text{C}$) of the bone collagen reveals that the diet of the Greenland Norse changed dramatically from predominantly terrestrial food at the time of Eric the Red around AD 1000 to predominantly marine food toward the end of the settlement period around AD 1450. We find that it is possible to ^{14}C -date these

bones of mixed marine and terrestrial origin precisely when proper correction for the marine reservoir effect (the ^{14}C age difference between terrestrial and marine organisms) is taken into account. From the dietary information obtained via the $\delta^{13}\text{C}$ values of the bones we have calculated individual reservoir age corrections for the measured ^{14}C ages of each skeleton. The reservoir age corrections were calibrated by comparing the ^{14}C dates of 3 highly marine skeletons with the ^{14}C dates of their terrestrial grave clothes. The calibrated ages of all 27 skeletons from different parts of the Norse settlement obtained by this method are found to be consistent with available historical and archaeological chronology. ...

The ^{14}C dating of bone is by now technically well established, relying on refined chemical extraction techniques combined with accelerator mass spectrometry (AMS) (for example, Brown et al. 1988). Since very small, even submilligram-sized, samples of bone collagen can be dated with AMS, it has become possible to select the best samples from a skeleton, minimizing problems with degradation and contamination. If the bone is reasonably well preserved, AMS ^{14}C ages as well as stable carbon isotopic ratios can be determined reliably for skeletal remains of archaeological interest without destroying the object. If the bone collagen is of terrestrial origin, the measured (conventional) ^{14}C age is converted into a true calendar age by using the global tree-ring calibration curve (Stuiver and Polach, 1977). However, this simple procedure is not applicable when the bone collagen is derived in part from marine carbon which, due to the marine reservoir effect, appears several hundred ^{14}C years older than the corresponding terrestrial carbon.

This seriously constrains the dating of bones of people who have had access to food protein from the sea. Therefore, archaeologists have generally distrusted the precision of ^{14}C dates of human bones. But precise ^{14}C dating of human bones is so attractive to the archaeologist that it is highly desirable to add bone to the list of datable material. To extend the calibration of measured ^{14}C ages to “marine” bones one needs to know both the marine food fraction and the reservoir age, that is, the age difference between the atmosphere and the particular region of the sea at the time the protein was produced. (Arneborg et al., 1999, p. 157)

In other words, unless the dietary difference is adjusted for the skeletons of piscivorous Vikings (who ate literally tons of fish during their lives!), they appear to be about a century (or more!) “older” than what they really are, because they appear to have been decaying (and thus losing) C-14 much longer than they actually have been.

The simple reality, of course, is that the Viking bones’ (supposedly) “missing” portion of the residual Carbon 14 was never there to start with!

So, what is the take-away lesson we can learn from these Viking skeletons?

For starters, note this limerick lesson I’ve composed regarding the relevant forensic proof:

Seafood Diets Skewed Carbon 14 “Dating” Of Viking Bones

*250 skeletons were found,
Decaying C-14 in the ground;
But the bone “dates” were odd,
Due to diets of cod—
Proving carbon “dates” often aren’t
sound.*

Scientific sleuthing, like detective work in a whodunit mystery, requires more than observing physical evidences

(Johnson and Tomkins, 2015; Johnson, 2016), so we need to learn from reliable eyewitnesses *with personal knowledge of the relevant events* in order to properly interpret the evidentiary meaning of the physical clues we can see today. Unlike the empirical science practice of observing experiments in the present, past events are no longer visible, so the need for reliable eyewitnesses is an unavoidable reality (Johnson, 2012, 2014).

Eyewitness reports need to be verified as reliable (or not), of course, so observing physical evidence is useful for corroborating (or contradicting) an eyewitness report (Job 38:4; Johnson and Tomkins, 2015; Ham, 1989).

But the other side of the coin, however, is that empirical science findings must be critiqued by reliable eyewitness reports, if *past events* are being investigated.

It is a forensic science fundamental that we need reliable witnesses to understand physical effects caused by unique events of the no-longer-observable past. Thus, unusual historical events—such as specific battles, crimes, traffic accidents, or a worldwide flood—require more than merely observing physical effects that exist in the present, such as fingerprints, rubber skid marks, or blood splatter (Johnson, 2016; Johnson and Tomkins, 2015; Johnson, 2012, 2014; Ham, 1989).

When it comes to reliable eyewitnesses who can report true facts about our origins, we need Genesis. *God is the perfect eyewitness*: He was there, He observed it all, He remembers perfectly, He is always truthful, and He is perfectly capable of communicating accurate and relevant information in human language. In other words, if we don’t trust Genesis, it is our own fault (John 5:44–47).

James J. S. Johnson

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Letters to the Editor

The policy of the editorial staff of CRSQ is to allow letters to the editor to express a variety of views. As such, the content of all letters is solely the opinion of the author, and does not necessarily reflect the opinion of the CRSQ editorial staff or the Creation Research Society.

Observations on Hubble Horizon and Schwarzschild Radius

I read with interest Dr. Faulkner's editorial (2017), in which he notes that the radius of the observable universe seems to be about the same size as its Schwarzschild radius. There is indeed a good reason for this fact, and I offer the following two points in hopes that they will be helpful to the discussion.

Hubble Horizon and Schwarzschild Radius

First, it turns out that in a flat universe, the Hubble horizon will always coincide with the black hole (Schwarzschild) radius of the mass within that horizon. This result is straightforward to demonstrate, as follows. We start by defining the *Hubble horizon* as the distance at which sources are receding from us at the speed of light. (This horizon is often considered the limit of the "observable universe," though technically this is in error, as I later note.) If we denote the (current) Hubble constant as H_0 , then the distance to the Hubble horizon is

$$r_H = \frac{c}{H_0}, \quad (1)$$

c being the speed of light. This radius r_H yields in turn a *Hubble volume* of

$$V_H = \frac{4\pi c^3}{3H_0^3}.$$

The Schwarzschild radius of the mass within this volume is the radius to which we would need to compress the mass in order to produce a black hole.

To calculate this mass, we need the density. It is standard to parametrize this density as a fraction of the *critical density* ρ_c , which is the density required for a spatially flat universe. (If the universe has a higher density than ρ_c , it will be closed, with positive curvature; if it has a lower density, it will be open, with negative curvature.) In particular, we write $\Omega = \rho/\rho_c$, so that $\Omega = 1$ corresponds to a flat universe. General relativity gives us the following expression for the critical density:

$$\rho_c = \frac{3H_0^2}{8\pi G},$$

where G is the gravitational constant. Putting these expressions together, the mass within the Hubble volume is

$$\begin{aligned} M_H &= \rho V_H = \Omega \rho_c V_H \\ &= \Omega \frac{3H_0^2}{8\pi G} \frac{4\pi c^3}{3H_0^3} = \frac{c^3 \Omega}{2GH_0}. \end{aligned}$$

General relativity further tells us that the Schwarzschild radius for this mass is

$$R_S = \frac{2M_H G}{c^2} = 2 \frac{c^3 \Omega}{2GH_0} \frac{G}{c^2} = \frac{c\Omega}{H_0}. \quad (2)$$

We note that Equations 1 and 2 differ by only a factor of Ω , which is unity for a flat universe (the sort of universe which most cosmologists believe we inhabit).

Thus it is no surprise that the Hubble radius equals the Schwarzschild radius of the mass within the Hubble volume, with a numerical value of about 4.3 Gpc (taking H_0 to be about $70 \text{ km s}^{-1} \text{ Mpc}^{-1}$)—because in a flat universe, the two radii *must* be equal.

We should also note that since "observable universe" denotes regions from which we can currently receive light, the appropriate radius is actually not the Hubble horizon but the *particle horizon*—the maximum distance from which light is reaching us today. This will in general be different from the Hubble horizon, which is the distance at which objects are *now* receding at the speed of light. Earlier in their history these objects would have been closer to us, and since recession velocity scales with distance, their recession velocity would have been lower when they emitted the light; thus it would be possible for us still to receive photons that they emitted earlier in their history, before they were receding at their current rate. Of course, in standard cosmology the Hubble parameter H changes with time—it was larger in the past, and if the expansion is accelerating, it will be larger in the future. So there is a delicate interplay between the (closer) distance at which the photons were emitted and the (faster) overall expansion rate in the past. In general the particle horizon is

$$r_{\text{PH}} = c \int_0^1 \frac{da}{a^2 H(a)},$$

where $a = (1 + z)^{-1}$ is the scale factor (z being the redshift), and $H(a)$ is the value of the Hubble parameter when the universe was a times its current size. $H(a)$ depends non-trivially on the composition of the universe, because each of its components (radiation, matter, vacuum energy) scales differently with expansion. It turns out that even if you use r_{PH} to define the observable universe and calculate its Schwarzschild radius $R_{\text{S,PH}}$, the two radii will be of the same order of magnitude, though in general they will not be equal.

But to return to the main point of this letter, the equality of the Hubble and Schwarzschild radii (for a flat universe) turns out to be a straightforward consequence of general relativity.

The (non-)Significance of the Schwarzschild Radius

It is also worth noting in this context that the Schwarzschild metric is a

vacuum solution to Einstein's field equations—meaning that it assumes the mass is concentrated in a singularity at the center. As a result, it turns out that the Schwarzschild radius of an object has no real significance if it happens to lie within the object. For instance, the sun's Schwarzschild radius is about 3 km—but nothing special happens inside the sun at this radius. Only if the sun were compressed to within that radius would any strange phenomena occur there. In particular, it is only then that the Schwarzschild radius would be an event horizon, but as it stands, there is no event horizon in the interior of the sun 3 km from its center. And the same holds true for the universe as a whole.

Thus, if the distribution of matter in the universe extends many times past the portion observable to us, we would indeed be able to draw a Schwarzschild

radius around ourselves; but we should not call it an event horizon, and we have shown that this radius will be the same distance from us as the Hubble horizon. But this fact has no special significance, since any observer sufficiently far from the edge could do the same. If the matter distribution of the universe is indeed bounded, then in the vacuum *outside* the matter, the metric would be Schwarzschild. But *inside* the distribution of matter, we have the standard Robertson-Walker metric for a homogenous expanding universe.

Sincerely,
Maxwell Lorentz

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Thoughts on the Tablet Model

I read with interest the article about the tablet model (CRSQ, Summer 2017). Thank you for your thorough research and careful analysis of the subject. I always learn a lot when I read the *Quarterly*. At the same time, when I was done with the article, my overall impression was, “They don’t see the forest for the trees.”

While I am not a research scientist, dedicated to examining every detail that touches on the subject of biblical authority or exegesis, I do feel that common sense can help us understand a lot about the Bible. The article came across as trying to come up with a naturalistic way to explain how Genesis was written, rather than giving the Holy Spirit the credit for being the Author responsible for it and having an active role in its creation. The universe had a supernatural origin, and therefore it cannot be explained or described in a totally naturalistic way. Similarly, the Bible is supernatural in origin, and the role of the Holy Spirit must be taken into account in seeking to understand it.

First Corinthians 10:11 says, “All these things happened unto them for ensamples: and they are written for our admonition, upon whom the ends of the world are come.” What happened to the people in the Bible, both Old Testament and New Testament, was intended by God to teach us about Him and His dealings with mankind. It appears that God has always wanted people to learn from those who have “been there, done that.” Since God’s plan has always been for us to learn from our predecessors, it would seem obvious that He would want an accurate record of what He did, and why He did it, and that’s the other part of what the verse tells us: it was all written down for us.

According to Genesis 5:3, Adam was 130 years old when Seth was born. There is no further mention of Adam after the birth of Seth. Did he simply vanish and

not do anything else after that? For eight hundred years? I doubt it!

Adam was 622 years old when Enoch was born, and 687 years old when Methuselah was born. That means he had 243 years of overlap with Methuselah. That’s about how old the United States is today—that’s a long time. Think about it! So, there was plenty of time for Adam to have carefully taught Enoch and Methuselah everything about the creation, the Fall, and everything he and Eve had lived through.

Methuselah was 369 years old when Noah was born, and died at 969 years of age, so there were 600 years of overlap with Noah. So, there was plenty of time for Methuselah to have taught Noah everything Adam and Enoch had taught him. Imagine, for example, if Methuselah had a question about something Enoch was telling him about Cain and Abel. Enoch could have replied, “If you don’t believe me, ask Adam. He was there and told me all about it.”

It’s highly unlikely that Adam spent his entire lifetime doing nothing but farming and fathering children. I believe that Adam, and every generation after him, had implanted into their makeup an awareness that God wanted a record kept of all that happened to them. Therefore Adam and the others listed in the “book of the generations of Adam” (Genesis 5:1) would have spent literally hundreds of years ensuring that their experiences were recorded and passed on to their descendants.

Why not pass the stories on in writing? I believe that it is highly unreasonable to think that Adam, Enoch, Methuselah, Noah, etc., were illiterate, and didn’t know how to write. After all, within less than a couple of hundred years after Creation, they had invented such technical fields as farming, animal husbandry, metallurgy, music and musical instruments, and more. They were absolutely brilliant!

Secular scholars say that the oldest forms of writing are the Sumerian and Akkadian cuneiform and Egyptian hieroglyphics. They date them to around 2,500 to 3,000 BC. The Flood took place about 1,660 years after Creation, or about 2,500 BC, so the secular dating isn’t too far off. These different languages would have first come into existence at the Tower of Babel, which was after the Flood. If written languages were there after the Flood, why not prior to it?

Did the Flood cause people to suddenly become intelligent enough to develop written language? I don’t think so. Prior to the Flood, they had literally hundreds of years, in each generation, to develop a system of writing. In addition, everyone spoke the same language. So, it would have been no stretch for them to begin writing, and autobiographies, biographies, and histories would probably have been at the top of the list of things to write.

In Luke 11:50–51, Jesus refers to Abel as one of the prophets whose blood “was shed from the foundation of the world,” and Jude 1:14 quotes from a prophecy given through Enoch. So, there have always been prophets, and it is logical that there would have been records of the prophecies that they were given, even though we may no longer have the documentation available to us.

Noah was 500 years old when Shem was born and was 600 years old when the Flood started, making Shem about 100 years old at that time. That means that Shem had about 100 years to learn directly from Methuselah what Adam had taught him. Before, during, and after the Flood, Noah had plenty of time to pass on to Shem everything Methuselah had taught him that Adam had taught him. The line of Shem would have been the specific “branch” of the “family tree” that would preserve those records for us, including those in writing.

Shem lived through the events of the Tower of Babel. I see no logical reason why God would have confused ALL of the languages, including Shem's. He only needed to create new languages for the rebellious descendants of Noah who refused to spread out over the earth. The original language that Adam and his descendants, including Shem, would have used could very well have been preserved and maintained, so that a continuous record could be kept. No translations or interpretations would have been required, since it was their language.

In addition, God always does everything right the first time. Therefore, the original language that God created for Adam and Eve would have been perfect. There would have been no need to change, alter, or revise it later. The languages created at Babel were not needed to replace the original one but simply be added to it, as alternatives (so that the people would be forced to do what God wanted them to do all along: populate the whole earth, and not just the Middle East).

Shem was 390 years old when Abram was born, and 465 years old when Abram left Haran. So, there was plenty of time for him to pass on to Abram everything that he had been taught, including the written records. In fact, if you add up the ages, Seth actually outlived Abraham by 35 years! It is little wonder that the ancients believed that there were some men who were "immortal." After all, Shem would have outlived entire generations of people after the Flood.

With the extensive overlap of the lives of the patriarchs, there is every reason to believe that the record of the events of earth's early history was carefully and accurately passed down from Adam to Enoch and Methuselah, and from Methuselah to Noah and Shem, and from Shem to Abram, Isaac, and Jacob, and on down to us through Moses, who edited these records into the book of Genesis.

What form the written records were kept in is really of secondary importance. The critical factor is that God was/is the Author of the whole Bible, whether He wrote through human "penmen" or He wrote it with His own finger, as He did with Exodus 20ff (see Exodus 31:18). Each penman would have put his own personality into the writing, just as the authors of the four Gospels did. But the Holy Spirit guided them as they wrote, to ensure accuracy.

Second Timothy 3:16 says, "All scripture is given by inspiration of God." The word "inspired" literally means "in-breathed," and refers to the breath of God—the Holy Spirit. And Jesus told us that the Holy Spirit was specifically sent to teach us all things and to bring all things to our remembrance that God has told us (see John 14:26). In other words, what was written in the Scriptures was taught by the Holy Spirit, and (while the writing of the Scripture was in progress) He brought to the writers' memories the things He wanted them to record.

The phrase "it is written" appears over 300 times in the Scripture, and Jesus rebuked the religious leaders of His day, saying (in paraphrase), "Don't you guys read your Bibles?" (see Matthew 22:31–32). It is also interesting that in that rebuke Jesus said, "Have ye not read that which was spoken *unto you by God?*" What is interesting is that Jesus was saying that God was the one who was speaking, not just to Moses, but to the Sadducees of Jesus' day, and to us as well.

According to Hebrews 11:6, "without faith it is impossible to please" God. So, there must always be an element of faith, which according to Hebrews 11:1, is "the evidence of things not seen." In other words, God won't tell (or show) us everything, because that would require no faith on our part. He will leave some things out, and these "secret things belong unto the Lord our God: but those things which are revealed belong unto us" (Deuteronomy 29:29).

There are a lot of things in the Bible that God simply doesn't tell us. For example, there is no record of what happened between the time Mary and Joseph returned from Egypt and when they went to Jerusalem when Jesus was about 12 years old. Nor is there any record of what took place in the years from that time until He began His ministry. Similarly, there is no record (at least in the Scriptures) of what Moses did in Egypt, while living as the son of Pharaoh's daughter, or what he did while tending sheep for Jethro. If it was important for us to know these things, God would have revealed them to us.

As noted in the article, we simply don't know how the book of Genesis was put together, except that it was obviously the product of only one Mind (the Holy Spirit) and was apparently put down on paper (or perhaps papyrus or some other medium) by Moses. There's nothing wrong with admitting that no one knows for sure. That's being honest.

The problem, in my view, arises when we fail to "accentuate the positive, and eliminate the negative" in our discussions. By focusing on the problems and difficulties, we tend to magnify them, leading to the conclusion that the Bible is untrustworthy. That would definitely not be your intention, I'm sure. Unfortunately, the Christian church seems to be the only army in the world that kills off its wounded.

Second Corinthians 5:18 says that God "hath given to us the ministry of reconciliation." Please note that it is not the ministry of criticism or condemnation. Error must be dealt with, but only in situations where we are absolutely certain of what is true. Uncertainty should lead us to admit that we don't know all the answers but to still accept those who are seeking to explore the possibilities, rather than "put them down."

I particularly have in mind the section of the article where the author says that the arguments used in support of the tablet model have been "shown to

be unconvincing, unfounded, or even detrimental.” They may not be “air-tight,” but I believe it to be prejudicial to say that they are “detrimental.” Let’s not consign them to the waste bin until we have all the facts and can provide a better alternative.

If I understand the article properly, the bottom line is that (as I have said already) we simply don’t know for sure. I agree. I propose that we allow God to be God, acknowledge the oversight of the Holy Spirit in the writing of the book

of Genesis, and emphasize the positives that we do know to be true—at least until He reveals what actually happened.

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Response: Criticisms of the Tablet Model Remain Valid

I appreciate Mr. Verigan’s thoughtful interaction with my paper. However, I believe his objections to my critique of the tablet model are misguided, representing conclusions ill-informed by the relevant textual and historical evidences, and unsupported by sound hermeneutical and theological method. Six principle areas of concern about his objections are outlined below.

First, Mr. Verigan avers that my paper seems to be trying “to come up with a naturalistic way to explain how Genesis was written.” I simply do not understand on what grounds he can make this assertion. The traditional view of Genesis’ authorship maintains that Moses wrote the book as he was guided along by the Holy Spirit (cf. 2 Peter 1:21). In that this position views the Holy Spirit as the revealer of historical realities that potentially would have been unknown to Moses and the Israelites, it is hardly naturalistic. If anything, it is the tablet model that is naturalistic, implying that written records are required in order to accurately convey truths about the past.¹

Arguments against the traditional view must demonstrate that the tablet model is not subject to similar perceived faults.

Second, Mr. Verigan repeatedly attempts to support the tablet model with what can only be regarded as plausibility arguments. Suggestions regarding opportunities for Adam and his descendants to pass on information from generation to generation are based entirely upon what is presumed likely, apart from textual evidence. (And even assuming the antediluvian and postdiluvian fathers instructed their children in history, who is to say they committed their experiences to print? In any case, the issue at hand is not whether they wrote historical records, but whether those records were compiled, essentially verbatim, into the book of Genesis. The textual evidence indicates not.) The same is true concerning Mr. Verigan’s conjecture about God preserving the original language of Adam and Eve at Babel. This view simply fails to account for the language of the Genesis 11 narrative, which states that “the LORD confused (Qal qatal of בָּלַל, “to mix up, to confound”) the language of all the earth [i.e., the original language of man]”—not that He added other

languages to it. Modern perceptions of what is possible (or even probable) should not be permitted to override the indicators of the text itself.

Third, Mr. Verigan has ignored a number of the arguments of my original paper, at points criticizing my work for assertions I did not make, and basing his case for the tablet model on assumptions seriously undermined by the evidence I presented. For example, he maintains that the reference to “the book of the generations of Adam” (Genesis 5:1) refers to source material written by Adam. But this ignores without reason (a) the clear lexical, contextual, and intertextual evidences that the *tôlēdôt* markers in Genesis represent transitional headings rather than colophons (and thus do not relate to the narrational information preceding them),² and (b) the literary evidence that Genesis 5:1 is an endophoric reference to the genealogical record following the verse, not an exophoric reference to Adam’s

¹ See point 5 under “Problems with the Tablet Model” in my original paper (p. 20).

² See point 4 under “Problems with the Tablet Model” in my original paper (pp. 18–20).

record of history.³ If one wants to hold that Genesis 5:1 is a reference to Adamic source material, these evidences need to be confronted and refuted, not ignored. Elsewhere, Mr. Verigan implies I believe the antediluvian fathers were illiterate. I do not. My dispute with the tablet model does not arise from questions about whether early man could write, or even whether the antediluvian fathers and the patriarchs wrote down their personal history. Rather, the question is whether these historical records (if they indeed existed) were compiled by Moses into the book of Genesis. To maintain that Adam and his descendants were literate says nothing about whether they passed down written (rather than oral) accounts of their history, or whether Moses strung these accounts together to produce the book of Genesis.

Fourth, Mr. Verigan makes a point about taking on faith those things which God does not clearly reveal to us (and quotes from Hebrews 11 and Deuteronomy 29). I believe this point is misplaced. To say that we are uncertain as to the details of Genesis' composition (or whether Moses was dependent upon any source material as he was moved by the Holy Spirit) is not to say the text is entirely devoid of evidence that either may affirm or undermine the tablet model. Neither Hebrews 11 nor Deuteronomy 29 speak to this matter (and I believe Mr. Verigan has wrongly applied them to the issue at hand, having removed them from their respective literary and theological contexts). As it is, my paper seeks to deal with actual, concrete, textual evidence which, I find, indicates a very different sort of compositional history for the book of Genesis than that proposed by the tablet model. I admit that I am uncertain if Moses relied on any (oral or written) source material; but I also

maintain that if he did, these sources are not identifiable in the text. To be clear, I believe we can argue confidently (on the basis of the various textual evidences delineated in my original paper) that the *tôlēdôt* markers in Genesis are integral to the compositional strategy and structural makeup of the book, but that they do not indicate the presence of earlier source material. This flatly disallows the tablet model, which maintains that the *tôlēdôt* statements mark the boundaries of source material written by Adam, Seth, Noah, and others and then compiled by Moses—with very little editing—into the book of Genesis we have today.

Fifth, Mr. Verigan stresses, in concluding his letter to the editor, that we ought “not consign [arguments in support of the tablet model] to the waste bin until we have all the facts, and can provide a better alternative.” However, this is problematic, for we will probably never have “all the facts” when it comes to something like the compositional history of an ancient book (divinely inspired or otherwise). On this standard, we would be forever barred from presenting a decisive argument on this critical question. This is no good. But even more problematic is Mr. Verigan's implication there remains no better alternative than the tablet model (or, at the very least, that I have not proposed any alternative). However, this is not the case, as I have defended the traditional view of Genesis' authorship, in which Moses, under the superintendence of the Holy Spirit, wrote the book. And while we may allow that Moses relied, in some measure, upon either written and/or oral source material, the fact remains that Moses was actually the author of the book, and not merely an editor or compiler of earlier source material. This traditional view has been the position of the church throughout much of its history. Among conservatives, only within the last half century has the tablet model gained any traction; and the traditional view still remains the dominant posi-

tion (except, perhaps, within creationist ministries). So, to suggest that we must wait for the development of a viable alternative to the tablet model is to dismiss (without any evidence it would seem) the long-standing traditional view of Mosaic authorship.

Finally, Mr. Verigan, in the opening of his letter, notes that he is “not a research scientist.” Although this observation is not directly related to the subject of the tablet model, it does illustrate a problem that is exceptionally relevant to the practice of biblical interpretation among creationists. I might ask, what would be gained if he were a research scientist? How would that better qualify him to speak to this issue? Simply stated, it wouldn't. It is time that research scientists—and engineers, medical doctors, schoolteachers, and general enthusiasts—stop presuming they can do the work of theologians and Hebraists.⁴ Incidentally, the tablet model originally was proposed by an amateur scientist who had little academic background in the study of the biblical text. Biblical scholars today are now left to clean up the mess he created. In moving forward to develop

³ See point 6 under “Evaluation of the Tablet Model” in my original paper (pp. 13–14).

⁴ Unfortunately, it sometimes seems scientists in the modern creationist movement are compelled to work apart from biblical scholars, rather than collaborate with them—not because the biblical scholars exclude the scientists, but because the scientists exclude the biblical scholars. This is sadly reflected in the CRS's rules of membership, which allows for creationists possessing graduate degrees in scientific disciplines to be voting members. No such provision is made for similarly credentialed biblical scholars. This double standard only discourages biblical scholars (who would be helpful resources in addressing many textual issues that are of concern to creationist scientists) from publishing in the creationist literature.

a viable understanding of the compositional history of Genesis, we need to be attentive to biblical scholarship in this area, paying attention particularly to discussions of pertinent textual data. And we ought to welcome, rather than

spurn, the contributions made by those qualified in the disciplines related to biblical studies. To do otherwise risks inviting embarrassment upon the modern creationist movement and undermining the many valuable contributions it has to

make to the development of a coherent, consistent biblical worldview.⁵

Lee Anderson, Jr.

⁵ For further discussion of this topic, please see my earlier essay, "Scripture as the Controlling Factor in Christian Worldview Development" in Danny R. Faulkner's monograph *The Created Cosmos: What the Bible Reveals About Astronomy* (Green Forest, AR: Master Books, 2016), pp. 323–331.

Media Reviews



The Universe: A Journey Through God's Grand Design

**2017. Four DVD set
(22 minutes each) and
viewer guide (112 pages)**

Institute for Creation Research,
Dallas, TX with AMS Pictures,
\$40.00

This DVD presentation joins several other recent professional Bible-science media productions. It reviews the field of astronomy from early times to the present day. The graphics, photography and interviews are high quality and compelling.

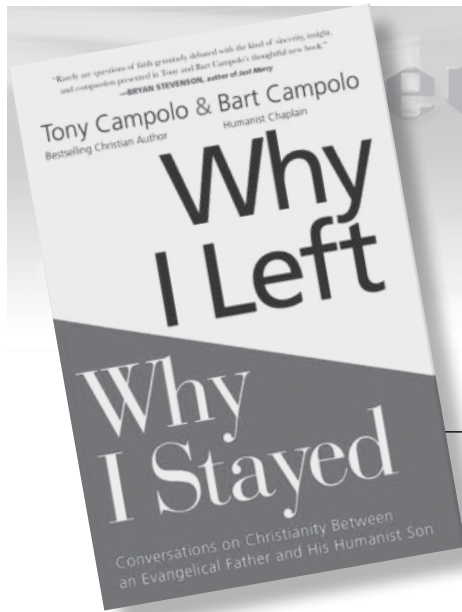
Markus Lloyd hosts the series, just as in the previous 2016 ICR series *Unlocking the Mysteries of Genesis* (2016), *Made in His Image* (2015), and *Uncovering the Truth about Dinosaurs* (2016). Science speaker interviews on as-

tronomy topics include Vernon Cupps, Don DeYoung, Danny Faulkner, Jake Herbert, Russ Humphreys, James Johnson, Jason Lisle, and astronaut Jeffrey Williams. Actors representing Galileo, Johann Kepler and Isaac Newton also make appearances in the presentations.

The DVD series comprises an introductory course in astronomy minus the technical details. There is good qualitative coverage of gravity, retrograde motion, and Kepler's and Newton's Laws.

Less familiar topics treated include star formation, William Herschel's discovery of planet Uranus in 1781, Percival Lowell's mistaken promotion of Martian life in 1906, and the little-known astronomy work of Annie Jump Cannon (1863–1941). Kudos to the Institute for Creation Research for producing popular-level Bible-science media.

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Why I Left, Why I Stayed: Conversations on Christianity Between an Evangelical Father and His Humanist Son

by Tony and Bart
Campolo

HarperOne, New York, 2017,
176 pages, \$25.00

The theme of this book, a Christian goes to college and becomes an atheist, is a story often repeated. Before reading the book, one with a knowledge of this problem can predict why Bart leaves the church, becomes a secular humanist, and no longer believes in God. As is often true, exposure to Darwinism in school is a critical reason why Bart rejected theism. He writes, “Thanks to Charles Darwin, we have at least a pretty good idea of how it [life] moves forward from simplicity of a single celled something to the complexity of us” (p. 145). In the end Bart concludes that “the totality of matter and energy ... is all that is real” (p. 144). He also no longer believes there is “any overarching purpose or design” of life and “the meaning of life ... is that there isn’t one. In short, the universe doesn’t care” about us (pp. 144–145).

One can understand why Bart’s father was so devastated when his son became an atheist and a nihilist. Bart reasons that although life is a miracle, given trillions of years, stars, and planets “such a miracle was bound to happen somewhere” sooner or later, and here we are as a result (p. 146). God is not needed because evolution explains everything. Given this reasoning, Bart concludes, why should we believe in

God? After explaining how mutations are the source of genetic variety that evolution selects, Bart opines that the most important DNA mutation is

the one that separated the first of us mammals from our reptilian ancestors. After all, while reptilian brains work just fine when it comes to managing hunger ... and the other basics of survival, they have no capacity for memory or emotion. We mammals, on the other hand, have added to those reptilian instincts what biologists call the limbic system, which enables us to feel emotions, remember experiences and cooperate with one another as a survival strategy. (p. 110)

Bart adds that what sets human beings apart from animals is the development of “the prefrontal cortex, where we reason, think logically, recognize the passage of time, generalize our experiences, and make complex decisions. Our prefrontal cortexes are what enable us to extend primitive moral intuitions into universal standards of behavior—like the Golden Rule” (p. 111).

Bart also had a college professor of Old and New Testament who spent most of the term documenting what he claimed are Bible errors, contradictions, and morally repugnant passages. After exposure to this view, Bart said “the results were devastating” to his faith (p. 45). Most of these claims, as are true of the other arguments Bart notes, are easy

to resolve if one does more research into apologetics. And most of the arguments Bart lists, his father, Tony Campolo, ignores. Tony’s major argument seems to be that he really loves Jesus, and Bart should also, and that should settle it. Tony’s response to evolution is that when considering evolution, we should remember

that many scientists do not believe that natural selection is simply a process of random trial and error. ... the evolutionary development of living organisms is being guided. I am not a young earth creationist, but obviously I believe that the guiding force is ... God. So then, you can count me in with those oft-ridiculed religionists who claim there is an “intelligent designer” driving the creative processes of the universe. (p. 139)

The author adds that he wrestles with why secularists like his son Bart choose to “live as though there is nothing and no one behind the awesome wonder of the universe or our most transcendent experiences, and then cherry-picks the theories and arguments that best support that lifestyle, [which] is an act of faith as well” (p. 139). Bart chose this worldview because of his secular education and his lack of education in the opposing view.

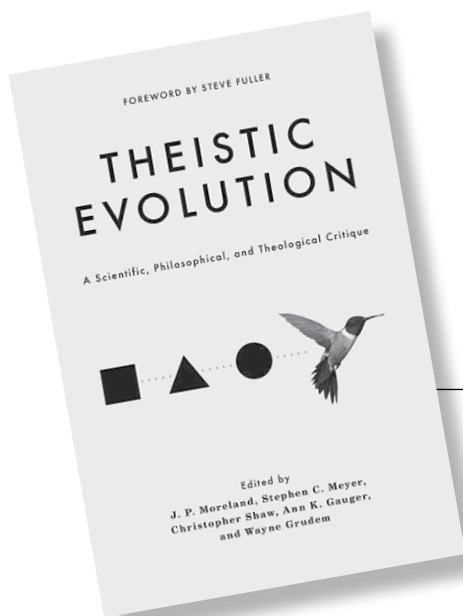
Bart also relates that his hero, Ursula, the daughter of a minister, wrote that the scientific account of creation is the epic of evolution including “The Big Bang, the formation of stars and planets,

the origin and evolution of life on this planet, the advent of human consciousness and the resultant evolution of cultures—this is the story, the one story, that has the potential to unite us, because it happens to be true” (p. 70). In short, this book was very disappointing because

Tony Campolo did not defend his faith. He accepts evolution as God’s means of creation, which seriously handicaps his ability to effectively defend his worldview. His son Bart saw that once one accepts evolution, it is very difficult to defend the main reason people give for

believing in God, namely the argument from design.

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Theistic Evolution: A Scientific, Philosophical, and Theological Critique

Edited by J.P. Moreland,
Stephen Meyer,
Christopher Shaw,
Ann Gauger, and
Wayne Grudem

Crossway Books, Wheaton, IL,
2017, 1007 pages, \$39.00

It has become popular, even in much of the evangelical world, to argue that God used evolution to create life. This position, promulgated by organizations such as *BioLogos* and scholars such as John Walton and Scot McKnight, is generally known as *theistic evolution*. Theistic evolution is a strange hybrid, seeking to marry secular assumptions and methods to Christian theism. Just how awkward of a marriage results is made clear in this book, massive in more ways than one. It contains a total of 33 chapters (including two introductions) and 972 pages of text, providing a comprehensive and scathing analysis of theistic evolution from multiple standpoints. Each chapter is a standalone

article, written by an expert in the field addressed, but all the articles are organized so they contribute to one cohesive critique. Virtually no facet of Darwinism and theistic evolution is left untouched. Anyone wanting to know why Darwinian evolution is scientifically on very shaky ground and why attempting to add God to the concept is both philosophically incoherent and biblically unacceptable should turn to this book.

Anyone reading the book should start with the two introductions, though they are not numbered as chapters. The scientific and philosophical introduction by Stephen Meyer very carefully delineates three different ways the word *evolution* can be used and three corresponding definitions of theistic evolution, one of which (God is responsible for change over time) is so trivial as to not be further addressed. It then briefly summarizes the first 26 chapters of the book and explains how they present a

comprehensive critique of the scientific and philosophical basis for the other two definitions of theistic evolution, that God has caused gradual and continual change over time so that all living things today are the descendant of a common ancestor and that God has used random and undirected evolution to create all life. Next, Wayne Grudem’s biblical and theological introduction summarizes the theological stakes in the discussion, explaining that theistic evolution has implications for how we believe Genesis 1–3 should be interpreted (Is it a true historical narrative or not?), what we think of creation (Did God create living things or matter than could evolve into living things?), and who we believe Adam and Eve to have been (Were they the first humans and ancestors of us all or just two out of thousands of early hominids?). Grudem then delineates twelve differences between the creation account of the Bible and theistic evolution. He

finally summarizes the last 5 chapters of the book and how they will address these issues in more detail. Overall the introductions do a good job of setting up the rest of the book.

The remainder of the text is divided into three sections with the first containing two parts. The longest portion, containing 17 of the 31 chapters, is dedicated to a scientific critique of theistic evolution. Part 1, entitled *The Failure of Neo-Darwinism*, contains 9 chapters criticizing belief in the creative power of evolution through mutation, natural selection, and other modern additions to the theory. Unsurprisingly for a book edited by Stephen Meyer, a strong case is made against the ability of undirected forces to generate the information found in modern cells. But more broadly, this portion of the book effectively refutes the entire mechanism for Darwinian evolution, then argues that if the theory is dying, there is no reason to try to accommodate Christian theology to it. The second part of the scientific critique, *The Case against Universal Common Descent and for a Unique Human Origin*, is (as the title suggests) itself subdivided. The first three chapters argue that the evidence does not support the argument that all life today derives from a single common ancestor. The next four chapters demonstrate that the fossil record does not reflect the gradual evolution of modern humans from an ape like ancestor. The genetic similarity between humans and chimpanzees has been overstated and does not reflect common ancestry. And population genetics models suggesting the human population was never less than a few thousand individuals are riddled with questionable assumptions, with the actual data being equally consistent with all modern humans descending from a single couple. The final chapter of the scientific critique argues that the career path of most modern scientists, built around getting tenure, grant money, and peer-reviewed publications, exerts

a strong pressure to conform with rather than challenge accepted theories and therefore actually hinders progress in science.

The next 9-chapter section is devoted to a philosophical critique of theistic evolution. It begins with an argument for the essential role of philosophy in science. That is followed by two chapters discussing the philosophical problems with the adoption of methodological naturalism by theistic evolutionists. The next four chapters deal with the implications of theistic evolution for the Christian worldview itself; how it undermines the place of theism in the plausibility structure of the culture, how it neglects what Christianity has long taught about the way God interacts with His world, how it makes God the author of natural evil, and gives science a place of supremacy over scripture as a source of knowledge. Following chapters highlight the failure of evolution, theistic or otherwise, to explain the origin of moral consciousness, and also look at C. S. Lewis's views on evolution.

The final and, at 5 chapters, shortest section of the book is a theological critique of theistic evolution. It begins with Wayne Grudem further developing his earlier argument that theistic evolution's view of creation contradicts scripture in 12 specific ways and undermines 11 crucial Christian doctrines. This is followed by a chapter focusing on the way theistic evolutionists explain Genesis 1–3 and why none of these approaches are faithful to the text. The next chapter offers a detailed analysis of the way the New Testament discusses Adam and the events of Genesis, with a special emphasis on the way Romans 5 and 1 Corinthians 15 link a historical Adam with the Gospel. Chapter 30 discusses what the church has historically considered to be sound doctrine concerning creation and determines that theistic evolution is incompatible with it. The final chapter of the book argues that, contrary to some modern claims,

the great defender of inerrancy B.B. Warfield was not a proponent of theistic evolution as understood today.

Overall, this is an important resource for those interested in the origins debate and an excellent book in its own right. I was struck by the degree to which, despite being composed of stand-alone articles written by 25 different authors, the volume held together as a single book. It was clear that a great deal of thought went into both the topics to be addressed and the organization of the work. The individual authors were clearly aware of what the other contributors were writing and often explicitly show how their chapter fits with the others. The quality of the writing is excellent; for the most part even highly technical arguments are presented clearly, in a way that does not sacrifice accuracy but is accessible to an educated layperson. I genuinely enjoyed reading the book. Most importantly, it contains a massive amount of well-sourced information. I learned a good deal about the most modern arguments for evolution and how the evidence refutes them. I also found several chapters in the philosophical section very interesting and useful—I adapted one of them into a lecture for my students on the nature of science and how God relates to His world. I also enjoyed and was spiritually encouraged by the chapters discussing the specific conflicts between the Old and New Testament and theistic evolution. I truly appreciated reading scholars taking God's word seriously and concretely engaging the arguments of those who undermine its trustworthiness.

Early in the Biblical and Theological introduction, Wayne Grudem stresses that this work takes no position on the age of the Earth and that the science chapters, when discussing fossil evidence, would use the commonly accepted Old Earth ages for rock strata and fossils. As a young-earth creationist myself, I was pleasantly surprised to find that the editors did keep age arguments

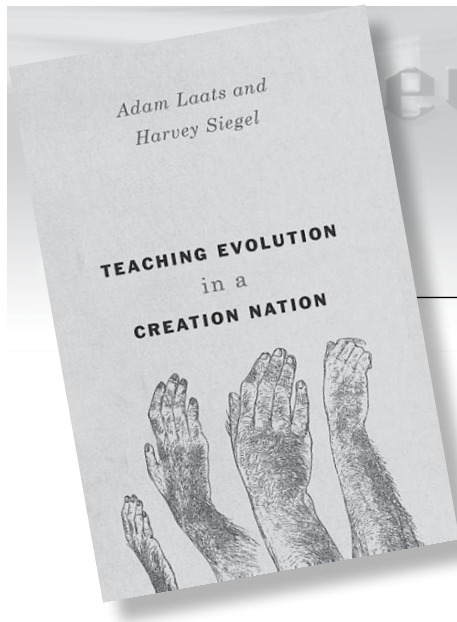
in the background for the most part; there were relatively few places where I found myself in direct disagreement with an author. However, there were a few places. In particular, I found Garrett DeWeese's discussion of natural evil in chapter 23 to be the weakest chapter in the work, primarily because he was attempting to argue from an old-earth perspective (I believe this was the only chapter to explicitly embrace a particular position on the age of the earth). As he fairly acknowledges (p. 689), a young-earth, literal interpretation of Genesis 1–3 readily explains natural evil as a result of the fall of man and the ensuing curse. However, in an old-earth perspective, natural evil existed long before man and his sin. This leads DeWeese to offer a free-process argument claiming that God created a dynamic world in a state of equilibrium, so that it was very good when made but natural evil was introduced when the equilibrium was upset, possibly starting with the fall of Satan. This seems to move the argument from the fall of man (which the Bible explicitly links to a curse on creation) to the fall of Satan (which it does not). I also consider this argument to give

too little acknowledgement to God's sovereign control over His creation. The whole problem very explicitly stems from having to inject billions of years not found in the biblical narrative. I noticed several other spots throughout the book where accepting a young-earth reading would have strengthened the argument being made. Furthermore, I couldn't escape the belief that if the authors subjected the arguments over the age of the earth to the same scrutiny they applied to Darwinian evolution, they would not have had shy away from the issue. There is something jarring about reading the sentence "Many conservative Christians, however, believe the scientific evidence strongly favors an old universe (some 13.8 billion years) and old earth (4.55 billion years)..." (p. 690) in a book whose first half explains why we should question the evidence normally put forward for Darwinian evolution, especially when one personally knows the evidence for an old earth is equally tenuous. That, however, is one relatively minor flaw in an otherwise very strong book. Even Dr. DeWeese's article which I have criticized is correct and persuasive in showing that however one

explains natural evil, theistic evolution makes God the author of it. The accommodation of an old-earth perspective is, in my opinion, a mistake but it does not materially detract from the strength of the work

Theistic Evolution is likely to be the standard source for the creationist and intelligent design community in responding to the arguments of *Biologos* and their supporters. It is a well-planned and written text that is both vastly informative and enjoyable reading. The book makes a strong case that theistic evolution is scientifically unnecessary because Darwinian evolution is impossible as currently understood, philosophically incoherent in its attempt to marry theism to methodological naturalism, and theologically dangerous in the way it undermines Christian confidence in scripture and disregards what the Bible clearly teaches about the first Adam and his connection to the last Adam, our Lord and Savior. I highly recommend the book to anyone interested in a scientifically accurate and biblically focused analysis of the origin of life.

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Teaching Evolution in a Creation Nation

by Adam Laats and Harvey Siegel

University of Chicago Press,
Chicago, 2016 128 pages \$60.00

This book is a guide for evolutionists to help cover evolution in classrooms in which a large number of students are creationists or intelligent design supporters. A major problem is that the terms *evolution*, *creationism*, and *Intelligent Design* are never defined, so one does not know specifically what ideas the authors are against. The basic goal of the book is to help teachers to achieve effective teaching of the facts in support of evolution as well as an understanding of scientific naturalism. If by chance some students still believe in some form of creation in spite of a teacher achieving this goal, teachers should conclude that they have done all they can to convert students to Darwinism (p. 80).

The authors assume that when teachers teach knowledge and understanding of Darwinism, most students will accept the Darwinian worldview. They stress that teachers should not attempt to force students to believe in Darwinism as that approach may be counterproductive and even backfire.

Authors Laats and Siegel ignore the long list of Darwinists who learned the knowledge, facts, and understanding behind Darwinism and rejected it due to their more in-depth learning and understanding of the relevant evidence against the theory. They also appear un-

aware of the extensive scholarly literature against Darwinism written by creationists and others. They do cite the 1964 *The Mystery of Life's Origin: Reassessing Current Theories* (Thaxton, 1984) evidently unaware that this now classic book has effectively disputed abiogenesis, an idea that is still widely regarded as a major unsolved problem in science. For this reason, various theories of the origins of life from outer space have become acceptable in some academic circles. The authors also erroneously argue that those who hold non-Darwinian worldviews are ignorant with their conclusions based on faith, whereas the evolutionary worldview is based solely on fact, and faith is not part of this worldview.

The authors' major support for their worldview is the fact that "scientists virtually unanimously endorse contemporary evolutionary theory and reject the creationist/ID alternatives as scientifically deficient and so unworthy of inclusion in the biology curriculum." Nonetheless, "Evolution opponents continue unabated in their efforts to both inhibit the teaching of evolution and increase the teaching of creationism/ID" (p. 82). The authors ignore the fact that many ideas held as scientific consensus in the past have turned out to be wrong, including the belief in racist Darwinian eugenics (Whitman, 2017; Donald, 2012).

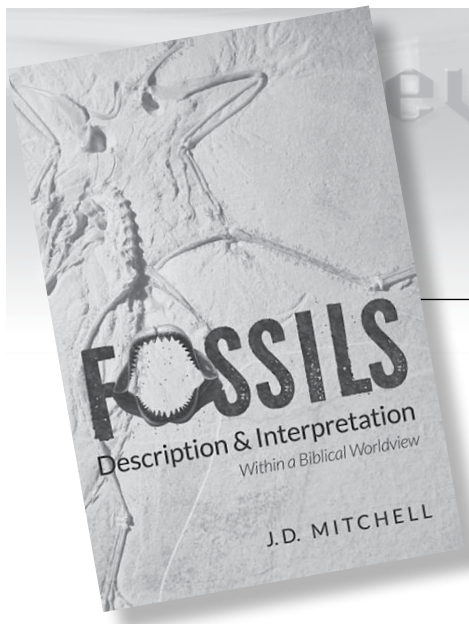
The conclusion that evolution is true science illustrates the fact that this book, as is true of so many written by Darwinists, is not based on an understanding of the problem, but is a polemic written to push a philosophical position, not to understand the controversy.

Much of the book attempts to discern why so many people reject Darwinism and accept the creation worldview, close to 38 percent according to a latest Gallup poll (Gallup, 2017). The reason could not be the facts, the authors argue, but it must be religion, ignorance, or even the culture (as argued in Chapter 8). The authors conclude the case for evolution has long been settled, the theory has achieved stunning success in biology, and the case is now closed and is not to be questioned (p. 82). This fact, the authors stress, must be taught in the schools throughout the nation. Such confidence is not science but dogmatism. The case is never closed in science proper, as the Newtonians, eugenicists and many others know full-well through the bitter experience of being wrong (Donald, 2012).

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Fossils: Descriptions & Interpretation within a Biblical Worldview

by J.D. Mitchell

C.E.C. Publishing, Gresham,
OR, 2017, 272 pages, \$26.00

This is an invaluable handbook for fossil aficionados, one of the very few manuals of its type written from a creation worldview. The fossils include both those from the author's private collection plus other examples, all printed in color.

Mitchell includes examples of plant fossils, trace fossils, fossil invertebrates and vertebrates including dinosaurs. The trace fossils include coprolites, gastroliths, footprints, eggs, fossil worm and clam borings, and water ripple trace fossils. Gastroliths (literally stomach stones) are stones that animals swallow to aid in breaking up vegetation to provide more surface area for digestion. These examples are sometimes forgeries, usually hand polished stones processed in an effort to pass them off as real gastroliths for profit motives. Forgery is a major problem in the field of fossils, with many even before the well-known Piltdown man case (Bergman, 2017). Mitchell assures that those in his collection are not forgeries.

The science of taphonomy, the conditions that allow fossilization and preservation of animal remains, shows

why only rapid burial can explain most of the fossil evidence existing today (p. 2). When animals die, bacteria and scavenger animals rapidly consume the carcass. To prevent this requires rapid burial. Another evidence of rapid burial is the "opisthotonic posture" where the head is thrown back, the hind limbs bent, and the tail extended (pp. 117, 246). This death pose is believed to be caused by severe hyperextension and spasticity caused by muscle spasms of the axial muscles along the spinal column as reported by veterinarians to occur shortly before certain animals die.

The author provides detailed information about his collection including a description and significance of each fossil for supporting the creation worldview. Anyone interested in fossils, including evolutionists, will find this book a useful source of documented information. The guide book covers the fossil evidences on which secular and creationist interpretations are based and discusses many of the mysteries surrounding the fossil record that cannot be logically solved using secular presuppositions. A detailed glossary (pp. 241–249), index and list of living fossils is included.

Living fossils look very similar to modern examples, a fact which is a major problem for evolutionists (pp. 259–260). The challenge is to explain life forms that evolutionists claim lived 70 or more million years ago that are virtually unchanged from those alive

today. Mitchell discusses the problem that classification is a very subjective endeavor both for evolutionists and creationists. One result is that many fossils are named on very thin evidence which is dominated by the Darwinian worldview (Mitchell, 2013). The evidence for many plant and animal species are known only from fossil fragments. One other problem is that research sometimes finds that two named species are actually juvenile and adult forms of the same species.

A challenge for creationists in general is they are not welcome in fossil storerooms of secular universities and natural history museums where the vast majority of recovered dinosaur fossils are stored. As a result, they must rely on evolutionists and published accounts for research. Nonetheless, this guide makes a major contribution to creationist research. It is recommended for amateurs as well as professionals. If you love fossils this is the book for you.

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Turtles as Hopeful Monsters

by Olivier Rieppel

Indiana University Press,
Bloomington, IN, 2017,
206 pages, \$45.00

Over the years the work of cosmology has been plagued by infinite regress problems. These occur when a proposed solution to a problem of origins merely creates another problem of origins further back. Ultimately there must be a First Cause, called the “unmoved mover paradox.” In Hindu philosophy the infinite regression problem famously reared its head when the question of what holds the world up was answered by the hypothesis that it was supported on the back of a turtle. When the query came back as to what the turtle might be standing on, the humorous anecdote concluded that it is “turtles all the way down.” Stories of evolutionary origins are not immune from such problems and the challenges with turtle evolution itself is a prime example.

After citing the ancient legend about the “turtles all the way down,” author Rieppel notes in the Introduction how turtles are one of nature’s most recognizable life forms. Their uniqueness piques more than the normal curiosity as to where they came from. He asks “how did their unique anatomy and bodily functions evolve? These are questions that have spurred intense research as well as heated debate for 200 years or more” (p. 3). He succinctly tells the reason why: “Paleontologists started to research the

ancestry of turtles well back in the nineteenth century, but until recently, all the fossil turtles pulled up from sedimentary rock spanning vast geologic time were already finished exemplars, complete with carapace and plastron” (p. 4). The turtle’s upper shell portion is called the “carapace” and the bottom half is called the “plastron.”

The author is considered to be one of the world’s foremost authorities on reptile anatomy and evolution. He is Rowe Family Curator of Evolutionary Biology at the Field Museum in Chicago. So one might expect him to focus the book exclusively on the shelled reptiles. But only two of the six chapters of his book are about the various fossil testudines. The book is about much more than turtle evolution. In fact, they really form the backdrop for an overarching lesson about the history and philosophy of evolutionary biology that involves a discussion about evolutionary processes, abrupt morphological leaps (saltation), macroevolutionary transformations and the appearance of biological novelties. I’m not aware of any other resource that delves into these topics as thoroughly as this treatise.

The first chapter introduces the reader to various experts on reptile evolution from the last few hundred years and tells how the author himself was drawn to studying turtles. The second chapter digs into the different historical schools of thought on turtle phylogeny and the accompanying lack of consensus. Even modern cladistic efforts at finding the

closest sister species that might share a common ancestor with testudines has proven to be inconclusive. After the debate over turtle affinities is covered in detail, the author more or less concludes that various experts have merely agreed to disagree. This leads him to postulate that turtles appeared abruptly from a dissimilar ancestor.

By the third chapter author Rieppel turns the corner and plays the historian. He reviews the works of Richard Goldschmidt, the originator of the “Hopeful Monster” hypothesis. Also Stephen Jay Gould, who brought Goldschmidt’s work back to popularity in the 1980s, and Günter Wagner who Rieppel argues provides the best current explanation of the “Hopeful Monster” hypothesis. The essence of the hypothesis is that major new lineages could come about through mutations during the early developmental stages of the embryo. While this typically would produce monsters that would be doomed to a premature death, Goldschmidt proposed that there would be some “hopeful monsters” in which drastic morphological changes would create new evolutionary lineages with novel body plans.

Rieppel plays the part of an apologist for Goldschmidt, picking up from where Gould left off (Gould, 1980), giving some of the German paleontological background that Goldschmidt relied upon. Though Rieppel admits that much of the mechanistic backbone has been rejected by modern evolutionists, things like trends of evolutionary

progress, orthogenesis, and even much of preadaptation, he follows Gould's arguments that the paleontological evidence compels evolutionists to embrace saltation. Rieppel is highly critical of the monolithic hardening of the Darwinian synthesis that happened in the post WWII 20th century, the reduction of all evolution to variation including random mutations and natural selection. He believes that advances in evolutionary developmental biology (evo-devo) will justify the hopeful monster hypothesis. Rieppel revisits the distinction between microevolution and macroevolution, noting that it was the Russian zoologist and geneticist Jurij Philpitschenko who originally coined the terms. In a passage of interest to creationists, the author highlights Philpitschenko's differentiation between hard science including microevolution and speculations about ancestry: "Genetics, he declared to be an exact, experimental science, as opposed to phylogenetics, which he considered a highly speculative historical science" (p. 102).

The embarrassment of Haeckel notwithstanding, the author gamely buys into the concept that the evolution of turtles can be illuminated by their embryological development. He goes further, "embryonic development could even allow prediction of the kind of fossils that still remain to be discovered" (p. 6). This is a serious stretch. But the idea that evo devo could rescue the Darwinists from the malaise of turtle phylogeny is something Rieppel has been toying with for some time. In a 2001 paper he reviewed the current understanding of embryonic development in testudines including their unique development of ribs outside the scapula. Next he states, "The turtle body plan is evidently highly derived, indeed unique among tetrapods. The problem for an evolutionary biologist is to explain these transformations in the context of a gradualistic process" (Rieppel, 2001, p. 990). Finally Rieppel concludes, "Ribs can only be

located either deep to, or superficial to, the scapula. There are no intermediates, and there is only one way to get from one condition to the other, which is the redirection of the migration, through the embryonic body, of the precursor cells that will form the ribs" (Rieppel, 2001, p. 991).

The book discusses broader paleontology as well. The author considers gaps in the fossil record and asks whether they can reasonably be attributed to missing strata and poor preservation. He concludes that it is more likely evidence of new body plans by saltation. He points out that those trained as neo-Darwinians are looking for a fossil series (phylogeny), but Rieppel argues that those intermediate forms may not exist and that the appearance of the testudine body plan may not have been a gradual process.

I like how the author describes the postulated pre-shell turtle ancestors. "To derive a transformed, newly adapted structure from an ancestral one requires the ancestral structure to be primitive, or generalized, in all aspects relative to the derived structure. Such a totally generalized ancestral structure would, however, not be adapted to any specific mode of life. But every living organism must somehow be adapted to some sort of mode of life. This renders such a generalized, zero-value ancestor that is not adapted to any specific mode of life a biological impossibility" (p. 122). This argument poses a problem for evolutionary intermediates in general. Such rhetoric is actually reminiscent of ID argumentation coming from the Discovery Institute.

The last two chapters focus on fossil testudines and are quite technical, particularly when Rieppel goes into expositions on skull and shell morphology. The final chapter especially details one testudine fossil find from southwestern China's Guizhou Province. This is a Triassic turtle named *Odontochelys semitestacea*, meaning "toothed, half-shelled turtle." *Odontochelys* sports a

fully-developed plastron. The author is convinced that such fossils support the theory that the shell formed from extensions of the backbone and ribs, not as bony plates from the skin. Rieppel rejects the idea of a turtle ancestor covered with a primitive protection of osteoderms like crocodiles. But does this Chinese "turtle on a half shell" fossil actually solve the turtle origin problems for the Darwinists? Not at all. This marine turtle has a fully-formed belly shield and does not fit the story of turtles evolving on land and then going to sea. Elizabeth Mitchell has done a good job giving a creationist response to these fossils (Mitchell, 2015).

Rieppel is a good writer, able to blend humor and clever questioning with detailed history. The book is as much a treatise on the evolution of evolutionary theory in the 20th century as it is on turtle phylogeny. I came away with the distinct feeling that evolutionary theory is like a revolving smorgasbord menu where particular theories and mechanisms are recycled at various intervals. There are some quotes that creationists can use against neo-darwinists, perhaps updating some of the hoary Gould and Eldredge quotes from the 1980s. For example, Rieppel states, "Darwin argued that evolution is a slow, gradual, stepwise process of transformation, fueled by random variation and constrained by natural selection. No biologist would question the reality of such Darwinian evolution, a process that plays out at the level of populations of interbreeding organisms that represent a species—perhaps a species that is about to split, slowly and gradually, into two daughter species. What some evolutionary biologists doubted in the past, however, and continue to doubt today, is that such Darwinian evolutionary processes are sufficient to explain radical evolutionary change as is evident in the turtle body plan" (p. 5).

The book is useful as a fresh affirmation that there is no clear "turtle ances-

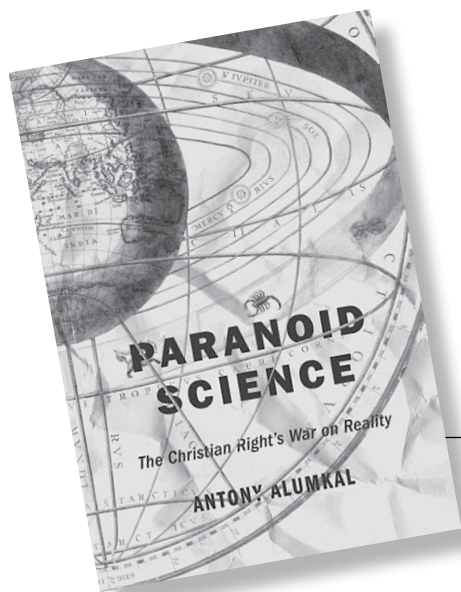
tor,” but rather it is turtles all the way down. However, unless one is interested in proposed turtle evolution or the fine details of the Hopeful Monster hypothesis, they might hesitate to pay the price of admission for this tome.

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Paranoid Science: The Christian Right's War on Reality

by Antony Alumkal

New York University Press,
New York, 2017, 142 pages,
\$29.95

Paranoid Science describes conservative Christians who challenge what the author calls “established scientific topics” including evolution. Conservative churches are also said to be wrong in challenging such fields as stem cell research and anthropocentric climate change.

The author is a sociology professor at United Methodist Iliff Seminary in

Denver. He labels as paranoid and anti-science those who believe that there exists evidence for intelligent design (ID) in the natural world. Also attacked are those who claim to have left the gay lifestyle, any who criticize current climate change projections, and people concerned about what he calls the “brave new world” of genetics. A review note on Amazon summarizes the book, saying, “Explores the Christian Right’s fierce opposition to science, explaining how and why its leaders came to see scientific truths as their enemy.” Since one

could write an entire book responding to the author’s claims, this review focus on a few major points.

The author mocks the conclusion that academia is intolerant of conservatives who fall into the above categories, including ID supporters who “battle over scientific truth” (p. 2).

This claim has been documented as ill-founded by many studies. For example, the ratio of liberal to conservative professors has profoundly changed from a ratio of 4 to 1 a few years ago to 17 to 1 today (Langbert, et al., 2016; Richard-

son, 2016). An excellent documentation of the problem is by author Dinesh D'Souza in *The Big Lie* (2017).

In recognition of the discrimination problem, Attorney General Jeff Sessions issued government-wide religious liberty guidance in 2017, granting deference to First Amendment freedoms. The memo outlines 20 principles that convey the Justice Department's view that religious freedom protections Americans have under federal law also apply to colleges. Sessions writes "Except in the narrowest of circumstances, no one should be forced to choose between living out his or her faith and complying with the law.... Therefore, to the greatest extent practicable and permitted by law, religious observance should be reasonably accommodated in all government activity, including employment, contracting, and programming" (Sessions, 2017).

Last spring there was a response to attempts to suppress nonconforming university faculty and students as occurred at Evergreen State College, Washington state. A professor wrote a paper directed to students, signed by 15 scholars from Yale, Princeton and Harvard. The paper

gave advice to young college-bound conservatives, positing that self-discipline and courage are required for survival in college.

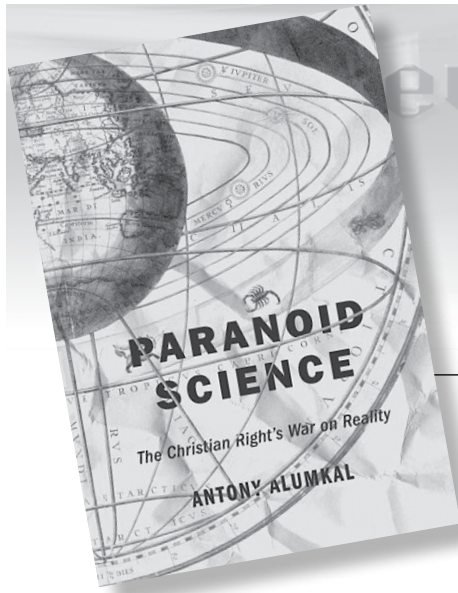
In short, the advice of the document is, "The vice of conformism is a temptation for all faculty and students ... due to a climate rife with group think." As a result, it is "all-too-easy to allow your views and outlook to be shaped by dominant opinion" on campus or in academia generally. The tyranny of public opinion doesn't merely discourage students from dissenting from prevailing views, but violates "the central point of a college education [which] is to seek truth and to learn the skills and acquire the virtues necessary to be a lifelong truth-seeker," and "open-mindedness, critical thinking, and debate are essential to discovering the truth." Author Alumkal describes these thoughts (signed by 15 highly accomplished scholars who teach at Yale, Princeton, and Harvard) as evidence of paranoia. He takes the consensus view as correct and demeans those who disagree with him (Alumkal, 2017).

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Paranoid Science: The Christian Right's War on Reality

by Antony Alumkal

New York University Press,
New York, 2017, 142 pages,
\$29.95

Author Alumkal teaches Sociology of Religion at the Iliff School of Theology in Denver. He identifies himself as Episcopal; the seminary is United Methodist. Alumkal was educated at Princeton and Berkeley, and these credentials help explain why the book is hostile toward biblical creation and any issue related to the conservative Christian worldview.

It is disappointing that a leading sociology professor is outdated in his references and knowledge of contemporary issues. Major discussion is given to material from Phillip Johnson's 1991 *Darwin on Trial* (p. 21), the 2005 Dover creation trial (p. 45), Ben Stein's 2008 *Expelled* movie (p. 46), Lee Stroebel's 2004 *Case for a Creator* (p. 51), the 1990 Promise Keepers movement (p. 52) and more. These all have historical impact but are not cutting edge as the book assumes. There is major criticism of Seattle's Discovery Institute but no mention of the CRS, ICR, AIG or CMI. In spite of his faculty position, the author's literary scope is clearly limited.

The basis of the entire book is a classic 1963 essay by historian Richard Hofstadter titled "The Paranoid Style in American Politics." The essay defines several indicators of the pejorative term *paranoia*. Author Alumkal in turn ap-

plies these indicators to four specific groups. His targets are those who support intelligent design, biblical marriage, limits on embryonic stem cell research, and finally, those who dare to question anthropocentric climate change. I will limit this review to the first area, intelligent design and biblical creation.

Alumkal's assumed definition of paranoia includes an unrealistic distrust of others and a feeling of persecution. This includes belief in a "grand conspiracy theory – claiming that the secret actions of ... evil leaders threaten to destroy American society" (p. x). This description oddly is applied to the modern creation movement. The Creation Research Society certainly would not accuse the secular science establishment of a sinister, secret agenda to lie and mislead society. In fact, mainline science is entirely transparent in crowding the media with naturalism. Now, one might add that deceitful demonic forces are indeed involved in promoting anti-theistic science theories, but this enters the realm of the unseen world.

Another of Alumkal's paranoia benchmarks is a mentality that "sees the world in terms of black and white, absolute good versus absolute evil" (p. 3), and there is some agreement here. Instead of a scientific search for truth which lies forever beyond discovery, the CRS does indeed find truth in the Bible. Our Society's 1963 Statement of Belief rightly claims that "The Bible is the written Word of God and, because it

is inspired throughout, all its assertions are historically and scientifically true in all the original autographs." We do indeed insist that the Bible is a factual document, although author Alumkal would not agree (p. 87).

The author also accuses biblical creationists of applying logical fallacies. One is the *false choice* fallacy which compares two opposing views and leaves out other options. Another is the *straw man* fallacy in which an artificial adversary is attacked (Alumkal uses the politically correct term *straw person* fallacy). A third fallacy concerns the *slippery slope*, the idea that compromise leads eventually to complete capitulation. Of course we all should be careful to avoid logical fallacies, and this includes author Alumkal, whose book description of today's Christian Right is dated and weak.

The book similarly goes on to caricature anyone as paranoid who dares question unlimited stem cell work, gender fluidity, and environmentalism. The final sentence of the book states the author's suggestion for going forward, "We can begin by publically calling intelligent design, the ex-gay movement, conservative bioethics, and climate change denial what they really are: paranoid science" (p. 201). I would reply that name-calling is not a positive way to discuss these issues.

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Instructions to Authors

Submission

Electronic submissions of all manuscripts and graphics are preferred and should be sent to the editor of the *Creation Research Society Quarterly* in Word, WordPerfect, or Star-Office/Open Office (see the inside front cover for address). Printed copies also are accepted. If submitting a printed copy, an original plus two copies of each manuscript should be sent to the editor. The manuscript and copies will not be returned to authors unless a stamped, self-addressed envelope accompanies submission. If submitting a manuscript electronically, a printed copy is not necessary unless specifically requested by the *Quarterly* editor. Manuscripts containing more than 35 pages (double-spaced and including references, tables, and figure legends) are discouraged. An author who determines that the topic cannot be adequately covered within this number of pages is encouraged to submit separate papers that can be serialized.

All submitted manuscripts will be reviewed by two or more technical referees. However, each section editor of the *Quarterly* has final authority regarding the acceptance of a manuscript for publication. While some manuscripts may be accepted with little or no modification, typically editors will seek specific revisions of the manuscript before acceptance. Authors will then be asked to submit revisions based upon comments made by the referees. In these instances, authors are encouraged to submit a detailed letter explaining changes made in the revision, and, if necessary, give reasons for not incorporating specific changes suggested by the editor or reviewer. If an author believes the rejection of a manuscript was not justified, an appeal may be made to the *Quarterly* editor (details of appeal process at the Society's web site, www.creationresearch.org).

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Manuscripts shall be computer-printed or neatly typed. Lines should be double-spaced, including figure legends, table footnotes, and references. All pages should be sequentially numbered. Upon acceptance of the manuscript for publication, an electronic version is requested (Word, WordPerfect, or Star-Office/Open Office), with the graphics in separate electronic files. However, if submission of an electronic final version is not possible for the author, then a cleanly printed or typed copy is acceptable.

Submitted manuscripts should have the following organizational format:

1. Title page. This page should contain the title of the manuscript, the author's name, and all relevant contact information (including mailing address, telephone number, fax number, and e-mail address). If the manuscript is submitted by multiple authors, one author should serve as the corresponding author, and this should be noted on the title page.

2. Abstract page. This is page 1 of the manuscript, and should contain the article title at the top, followed by the abstract for the article. Abstracts should be between 100 and 250 words in length and present an overview of the material discussed in the article, including all major conclusions. Use of abbreviations and references in the abstract should be avoided. This page should also contain at least five key words appropriate for identifying this article via a computer search.

3. Introduction. The introduction should provide sufficient background information to allow the reader to understand the relevance and significance of the article for creation science.

4. Body of the text. Two types of headings are typically used by the *CRSQ*. A major heading consists of a large font bold print that is centered in column, and is used for each major change of focus or topic. A minor heading consists of a regular font bold print that is flush to the left margin, and is used following a major heading and helps to organize points within each major topic. Do not split words with hyphens, or use all capital letters for any words. Also, do not use bold type, except for headings (italics can be occasionally used to draw distinction to specific words). Italics should not be used for foreign words in common usage, e.g., "et al.", "ibid.", "ca." and "ad infinitum." Previously published literature should be cited using the author's last name(s) and the year of publication (ex. Smith, 2003; Smith and Jones, 2003). If the citation has more than two authors, only the first author's name should appear (ex. Smith et al., 2003). Contributing authors should examine this issue of the *CRSQ* or consult the Society's web site for specific examples as well as a more detailed explanation of manuscript preparation. Frequently-used terms can be abbrevi-

ated by placing abbreviations in parentheses following the first usage of the term in the text, for example, polyacrylamide gel electrophoresis (PAGE) or catastrophic plate tectonics (CPT). Only the abbreviation need be used afterward. If numerous abbreviations are used, authors should consider providing a list of abbreviations. Also, because of the variable usage of the terms “microevolution” and “macroevolution,” authors should clearly define how they are specifically using these terms. Use of the term “creationism” should be avoided. All figures and tables should be cited in the body of the text, and be numbered in the sequential order that they appear in the text (figures and tables are numbered separately with Arabic and Roman numerals, respectively).

5. Summary. A summary paragraph(s) is often useful for readers. The summary should provide the reader an overview of the material just presented, and often helps the reader to summarize the salient points and conclusions the author has made throughout the text.

6. References. Authors should take extra measures to be certain that all references cited within the text are documented in the reference section. These references should be formatted in the current CRSQ style. (When the *Quarterly* appears in the references multiple times, then an abbreviation to CRSQ is acceptable.) The examples below cover the most common types of references:

Robinson, D.A., and D.P. Cavanaugh. 1998. A quantitative approach to baraminology with examples from the catarrhine primates. *CRSQ* 34:196–208.

Lipman, E.A., B. Schuler, O. Bakajin, and W.A. Eaton. 2003. Single-molecule measurement of protein folding kinetics. *Science* 301:1233–1235.

Margulis, L. 1971a. The origin of plant and animal cells. *American Scientific* 59:230–235.

Margulis, L. 1971b. *Origin of Eukaryotic Cells*. Yale University Press, New Haven, CT.

Hitchcock, A.S. 1971. *Manual of Grasses of the United States*. Dover Publications, New York, NY.

Walker, T.B. 1994. A biblical geologic model. In Walsh, R.E. (editor), *Proceedings of the Third International Conference on Creationism* (technical symposium sessions), pp. 581–592. Creation Science Fellowship, Pittsburgh, PA.

7. Tables. All tables cited in the text should be individually placed in numerical order following the reference section, and not embedded in the text. Each table should have a header statement that serves as a title for that table (see a current issue of the *Quarterly* for specific examples). Use tabs, rather than multiple spaces, in aligning columns within a table. Tables should be composed with *14-point type* to insure proper appearance in the columns of the *CRSQ*.

8. Figures. All figures cited in the text should be individually placed in numerical order, and placed after the tables. Do

not embed figures in the text. Each figure should contain a legend that provides sufficient description to enable the reader to understand the basic concepts of the figure without needing to refer to the text. Legends should be on a separate page from the figure. All figures and drawings should be of high quality (hand-drawn illustrations and lettering should be professionally done). Images are to be a minimum resolution of 300 dpi at 100% size. Patterns, not shading, should be used to distinguish areas within graphs or other figures. Unacceptable illustrations will result in rejection of the manuscript. Authors are also strongly encouraged to submit an electronic version (.cdr, .cpt, .gif, .jpg, and .tif formats) of all figures in individual files that are separate from the electronic file containing the text and tables.

Special Sections

Letters to the Editor:

Submission of letters regarding topics relevant to the Society or creation science is encouraged. Submission of letters commenting upon articles published in the *Quarterly* will be published two issues after the article's original publication date. Authors will be given an opportunity for a concurrent response. No further letters referring to a specific *Quarterly* article will be published. Following this period, individuals who desire to write additional responses/comments (particularly critical comments) regarding a specific *Quarterly* article are encouraged to submit their own articles to the *Quarterly* for review and publication.

Editor's Forum:

Occasionally, the editor will invite individuals to submit differing opinions on specific topics relevant to the *Quarterly*. Each author will have opportunity to present a position paper (2000 words), and one response (1000 words) to the differing position paper. In all matters, the editor will have final and complete editorial control. Topics for these forums will be solely at the editor's discretion, but suggestions of topics are welcome.

Book Reviews:

All book reviews should be submitted to the book review editor, who will determine the acceptability of each submitted review. Book reviews should be limited to 1000 words. Following the style of reviews printed in this issue, all book reviews should contain the following information: book title, author, publisher, publication date, number of pages, and retail cost. Reviews should endeavor to present the salient points of the book that are relevant to the issues of creation/evolution. Typically, such points are accompanied by the reviewer's analysis of the book's content, clarity, and relevance to the creation issue.

Creation Research Society

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The membership/subscription categories are defined below:

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All members (categories 1–5 above) must subscribe to the Statement of Belief as defined on the next page.

Please complete the lower portion of this form and mail it with payment to CRS Membership Secretary, 6801 N. Highway 89, Chino Valley, AZ 86323, or fax for credit card payment to (928) 636-1153. Applications may also be completed online at creationresearch.org.



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Creation Research Society

History—The Creation Research Society was organized in 1963, with Dr. Walter E. Lammerts as first president and editor of a quarterly publication. Initially started as an informal committee of 10 scientists, it has grown rapidly, evidently filling a need for an association devoted to research and publication in the field of scientific creation, with a current membership of over 600 voting members (graduate degrees in science) and about 1000 non-voting members. The *Creation Research Society Quarterly* is a peer-reviewed technical journal. It has been gradually enlarged and modified, and is currently recognized as one of the outstanding publications in the field. In 1996 the CRSQ was joined by the newsletter *Creation Matters* as a source of information of interest to creationists.

Activities—The Society is a research and publication society, and also engages in various meetings and promotional activities. There is no affiliation with any other scientific or religious organizations. Its members conduct research on problems related to its purposes, and a research fund and research center are maintained to assist in such projects. Contributions to the research

fund for these purposes are tax deductible. As part of its vigorous research and field study programs, the Society operates The Van Andel Creation Research Center in Chino Valley, Arizona.

Membership—Voting membership is limited to scientists who have at least an earned graduate degree in a natural or applied science and subscribe to the Statement of Belief. Sustaining membership is available for those who do not meet the academic criterion for voting membership, but do subscribe to the Statement of Belief.

Statement of Belief—Members of the Creation Research Society, which include research scientists representing various fields of scientific inquiry, are committed to full belief in the biblical record of creation and early history, and thus to a concept of dynamic special creation (as opposed to evolution) both of the universe and the earth with its complexity of living forms. We propose to re-evaluate science from this viewpoint, and since 1964 have published a quarterly of research articles in this field. *All members of the Society subscribe to the following statement of belief:*

1. The Bible is the written Word of God, and because it is inspired throughout, all its assertions are historically and scientifically true in all the original autographs. To the student of nature this means that the account of origins in Genesis is a factual presentation of simple historical truths.

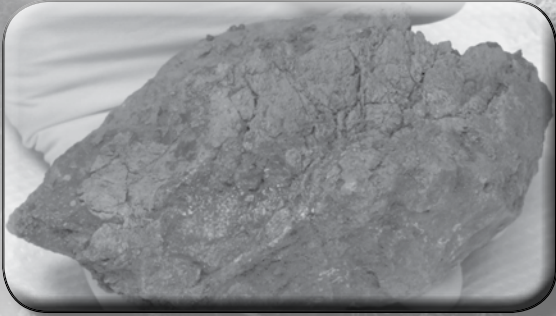
2. All basic types of living things, including humans, were made by direct creative acts of God during the Creation Week described in Genesis. Whatever biological changes have occurred since Creation Week have accomplished only changes within the original created kinds.

3. The Great Flood described in Genesis, commonly referred to as the Noachian Flood, was a historical event worldwide in its extent and effect.

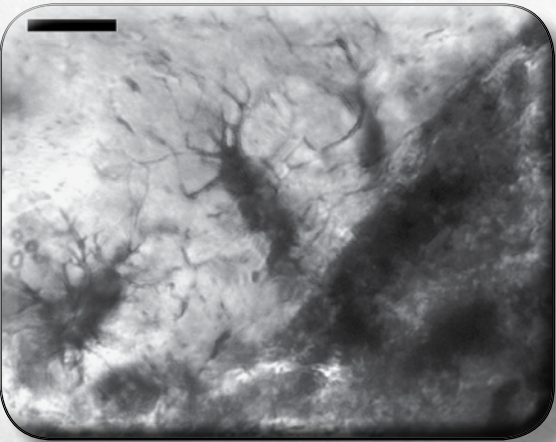
4. We are an organization of Christian men and women of science who accept Jesus Christ as our Lord and Savior. The act of the special creation of Adam and Eve as one man and woman and their subsequent fall into sin is the basis for our belief in the necessity of a Savior for all people. Therefore, salvation can come only through accepting Jesus Christ as our Savior.

iDINO II

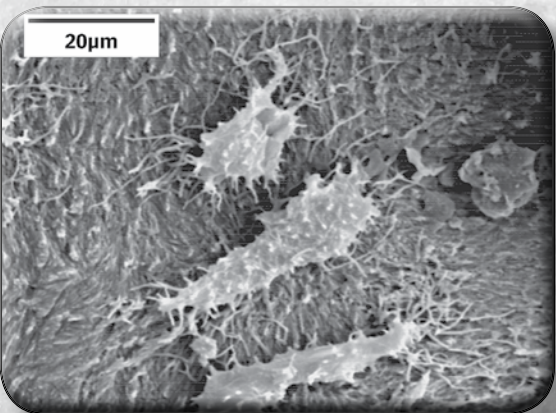
Investigation of Dinosaur Intact Natural Osteo-tissue



A fragment of the *Triceratops* brow horn.
Fragments, such as this one,
still contain tissue and cells.



Microscopic examination of tissue
extracted from a *Triceratops* horn
reveals bone cells still present.



Electron microscope picture of
intact bone cells still in tissue
extracted from a *Triceratops* horn.

How can pliable, stretchable tissue survive inside dinosaur fossils for over 65 million years?

How can this tissue still contain intact cells and even dinosaur proteins?

How can this fragile biological material survive for so long?

The answer to these questions directly challenges the current, evolutionary-biased, geologic timescale.

The Creation Research Society began its iDINO research initiative for the purpose of studying soft tissue in dinosaur fossils. The first phase of the project detected pliable, unfossilized tissue in a brow horn of a *Triceratops*. Within this tissue were intact osteocytes (bone cells). Some results from the iDINO project have been published in a technical microscopy journal and presented at an international microscopy conference. The Spring 2015 issue of the *Creation Research Society Quarterly* also features a special report of the iDINO project. Plus, to further spread the important information about soft tissue, the Society is developing a video (Echoes of the Jurassic).

The **second phase** of the project (iDINO II) will look more extensively at the process of tissue preservation. Evolutionists have offered various theories of how this tissue could survive for millions of years. iDINO II will methodically investigate these preservation claims, assessing their plausibility.

The iDINO results have already provided a strong challenge to the evolutionary worldview. More extensive and detailed examination may provide even stronger evidence that the age of dinosaur fossils is far less than 65 million years. To this end, the Society continues to seek those willing to fund this project with either one-time gifts or monthly donations.

For more information contact us at (928) 636-1153 or crsvarc@crsvarc.com.

Also visit <http://tinyurl.com/nphm2c4> for project updates and details.



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